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zookeeper

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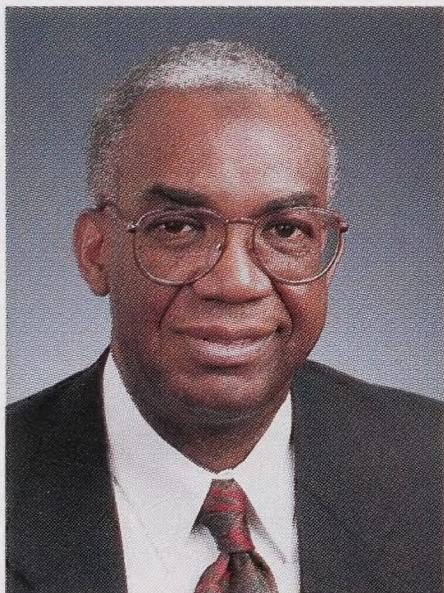
30 BOOKS, NATURALLY

Brief reviews of seven bear books.



NATIONAL ZOOFARI 1999: A BEAR AFFAIR

This year's National ZooFari, set for Thursday evening, May 20, is *A Bear Affair*, celebrating the Zoo's four species of bears. Most famous, of course, is our giant panda, Hsing-Hsing, who has been a favorite of visitors for more than 25 years. The Zoo is also home to a Kodiak, or brown bear, two spectacled bears, and, three sloth bears, each with its fair share of devoted admirers.



Wherever they live, people feel a special affinity with bears, and to many of us, bears are the quintessential wild animals. Yet like so many other large mammals, bears face an uncertain future. Seven of the eight species are considered endangered or vulnerable, as are some populations of the eighth—the American black bear. Habitat loss and fragmentation, overhunting and poaching, human indifference—the usual culprits—are responsible for their plight. Conservation action, as well as much greater efforts to educate people about bears, is essential.

Most of us, however, cannot work directly to help save endangered bears. We can't track them in the wild, carry out breeding programs, or create educational exhibits. We can, however, support this work with our encouragement and our dollars. Attending this year's National ZooFari is a great way to start. *A Bear Affair* will not only focus attention on bears, it will mark the first stages of Zoo initiatives to develop new bear exhibits at the Zoo and to redouble efforts to save giant pandas in the wild.

Of course, for all its serious and important purpose, ZooFari is a spectacular evening of fun, food, and entertainment. It also offers a rare opportunity to visit some of your favorite Zoo animals, including our bears, at night. One hundred of Washington's finest restaurants, including Galileo da Roberto Donna, Kinkead's, 1789, Cesco, and The Bread Line, will serve gourmet fare. Dozens of entertainers will bring the park alive. A silent auction, sweepstakes, and fish ponds will give everyone the chance to go home a winner. And in keeping with Zoo style, safari attire is definitely appropriate.

I hope you will join us at *A Bear Affair* to support your National Zoo. Just call 202.673.4613, or use our secure online order form at <http://www.fonz.org/zooafari99.htm> to reserve tables or tickets now. You'll enjoy the wildest party of the year, and help to save the wild at the same time. I look forward to seeing you there!

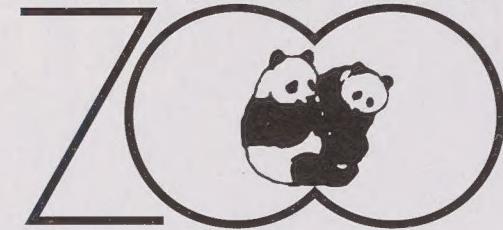
Sincerely,

A handwritten signature in black ink, appearing to read "Clinton A. Fields".

Clinton A. Fields
Executive Director

P.S. For kids and families, this year's ZooFari for Kids—Guppy Gala—is Friday, May 14. Last year tickets to Guppy Gala sold out weeks in advance, so reserve your tickets to this fun fundraiser today! Call 202.673.4613 or go to <http://www.fonz.org/guppygala99.htm>.

Friends of the National



is a nonprofit organization of individuals, families, and organizations who are interested in helping to maintain the status of the Smithsonian National Zoological Park as one of

the world's great zoos, to foster its use for education, research, and recreation, to increase and improve its facilities and collections, and to advance the welfare of its animals.

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The Smithsonian National Zoological Park is located at 3001 Connecticut Ave., N.W., Washington, DC 20008-2537. Weather permitting, the Zoo is open every day except December 25. Hours: From May 1 to September 15, grounds are open from 6 a.m. to 8 p.m.; buildings, 10 a.m. to 6 p.m. From September 16 to April 30, grounds are open from 6 a.m. to 6 p.m.; buildings, 10 a.m. to 4:30 p.m. **Director:** Michael H. Robinson.

Membership in FONZ offers many benefits: publications, discounts on shopping, programs, and events, free parking, and invitations to special programs and activities to make zooging more enjoyable and educational. To join, write FONZ Membership, National Zoological Park, Washington, DC 20008, or call 202.673.4961.

Membership categories and annual tax-deductible dues are:

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ZooGoer (for those outside a 200-mile radius of Washington, DC)	\$25 (\$8 of membership dues goes to a ZooGoer subscription)

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NOTES NEWS

SUMMER CAMPS

Summer is just around the corner and school will be out before you know it, so now is the time to make camp plans for kids. FONZ's Summer Camp is held at the Zoo's Conservation and Research Center (CRC) in Front Royal, Virginia. Overnight campers enjoy a seven-day outdoor adventure, searching for wildlife in the forests, grasslands, wetlands, ponds, and streams on CRC property. Weeks for ages 9 and 10 are July 4 to July 10, and July 11 to 17. Weeks for ages 11 and 12 are July 18 to 24, July 25 to 31, and August 1 to 7. There is also a two-week program for 11- and 12-year-olds. That camp runs from July 25 to August 7. The camp fee for FONZ members is \$525; for nonmembers the

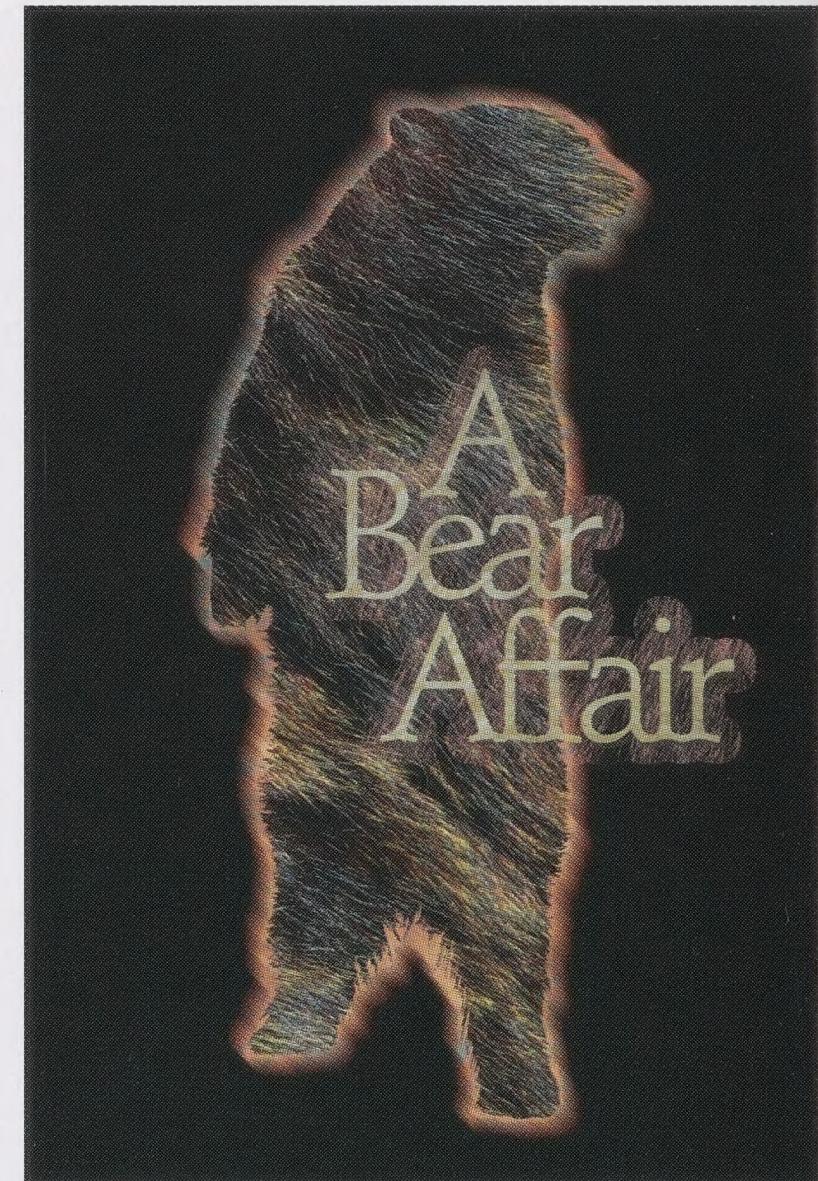
fee is \$700. A \$150 nonrefundable deposit is required with registration.

For younger children (kids entering grades K through five next fall), FONZ offers the Summer Safari Day Camp at the National Zoo. The program enables kids to explore the lives and habitats of animals from around the world. The week-long sessions beginning on June 22 and ending the week of August 10, are offered from 9 a.m. to 12 p.m., and 9 a.m. to 3 p.m., and are limited to 15 campers each. Fees for the morning session are \$120 for members, \$160 for nonmembers; and the full-day session fee is \$160 for members, \$215 for nonmembers. For more information, call 202.673.4962.

GALA EVENTS

Kids can scale a climbing wall, jump in a moon bounce, climb behind the wheel of a fire truck, and enjoy dozens of other activities and entertainment at Guppy Gala, FONZ's annual fundraising extravaganza on Friday, May 16, from 6 p.m. to 8 p.m. Other highlights include Globetrotter Spencer "Spinny" Johnson, Flumpa the Frog, and women's World Cup soccer clinics. Of course, the Zoo's 5,800 animals are part of the show, and there will be numerous animal demonstrations and keeper talks. Admission includes dinner and dessert. Tickets are \$15 for FONZ members and \$18 for nonmembers. Proceeds benefit the Zoo's conservation and education programs.

A Bear Affair, the 1999



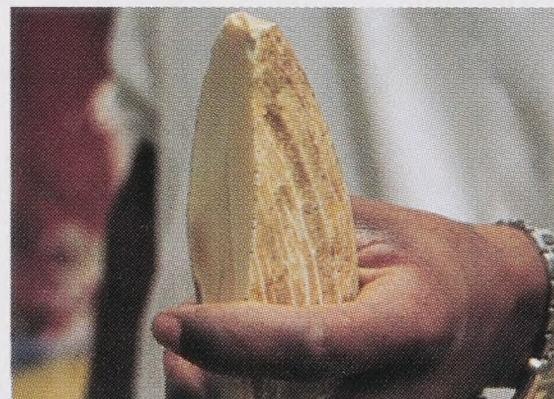
ZooFari, is scheduled for Thursday, May 20, from 6:30 p.m. to 11 p.m. More than 100 of Washington's finest restaurants, including renowned chefs like Roberto Donna, Bob Kinkead, and Michel Richard will serve their gourmet food. Other planned par-



ANIMAL NEWS

Keepers recently trimmed Happy's elongated lower canines. Like wild hippos, the Zoo's 18-year-old male Nile hippo's canines and incisors grow continuously—up to 20 inches in a lifetime. These teeth are usually worn down through contact with the

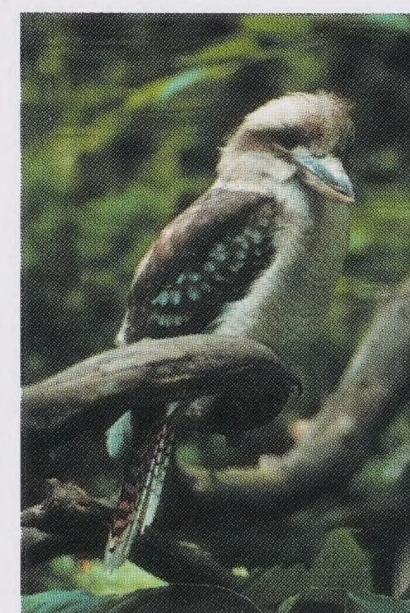
upper canines or even broken off when used for protection or in ritual dominance displays. If left untrimmed, canines can continue



to grow through the upper jaw, making it difficult for the hippo to eat and possibly

leading to health problems. The entire process took less than an hour and both teeth will be used for educational purposes.

You won't see Tarzan swinging through the Bird House, but the new calls heard there will remind you of the 1930s and 1940s movies. Two male giant kingfishers, or laughing kookaburras, have been added to the collection. Kookaburras, also known as "alarm birds," "breakfast birds," and "Ha Ha" or "Woop Woop pigeons," are native to Australia's open woodlands. They



are known for their boisterous laugh, the "kook-kook-kook" that rises into a staccato "kook-kook-kook-ka-ka-ka" made famous in the Johnny Weissmuller movies.

Two boatbill herons hatched in early December. The two, which are now fledged, are exhibited with the Zoo's spoonbills and hornbills. A Rothschild's myna chick hatched in mid-December. It is on exhibit with its parents in the Bird House. About 65 new ducks, including a pair of Australian shelducks, were added to the Wetlands Exhibit.

ticipants include 1789 Restaurant, The Bread Line, The Palm, Cesco, and Red Sage. This year's entertainers include Shirley Alston Reeves, the original lead of The Shirelles, the Johnny Artis Band, and Trux Baldwin & The Starlight Octette. Additional activities include a silent auction, sweepstakes, and animal demonstrations. ZooFari proceeds benefit the Theodore H. Reed Animal Fund, which supports the Zoo's efforts to exhibit, study, breed, and educate the public about rare and endangered species. Tickets are \$95 for members. The nonmember ticket price is \$115. All but \$25 is tax deductible. Tables for ten (includes 15 tickets) hosted by a zoologist who will conduct a special tour are \$3,000 (\$2,625 is tax deductible). A table for ten is \$1,500 (\$1,250 is tax deductible). For tickets or more information call 205-232-2273.

tion, call the Membership Office at 202.673.4613, or visit www.fonz.org/guppy-gala99.htm and www.fonz.org/zoofari99.htm.

INTERN HOUSING

About 15 undergraduate and graduate students come to work in various Zoo departments during summer break (June through August). FONZ is looking for members who are willing to offer room and board to a student. Please call Jennifer Wheeler in the Department of Education and Volunteer Services at 202.673.7801 to discuss the program.

LECTURE SERIES

May 27
Sir Ghillean Prance, director of the Royal
Botanic Gardens at Kew, England, presents

“The Interdependency between Animals and Plants in the Amazon Ecosystem.” This program is part of the Smithsonian’s celebration of the National Museum of Natural History’s (NMNH) Margaret Mee exhibit opening on May 27. The Mee exhibit is open at NMNH through August 20. Mee was a botanical illustrator who devoted much of her life to drawing plants of the Amazon.

Books signings begin at 7 p.m., and lectures at 8 p.m., in the Zoo's Visitor Center. To receive email announcements of lectures, send an email message to rsvp@njp.si.edu asking to be added to the list, or call 202.673.4801.

Photos by lessie Cohen/NZP



BEARS CLOCKWISE: PANDA, POLAR,
BLACK, SLOTH, BROWN, POLAR,
SPECTACLED, SMOKEY, STUFFED,
SUN.



THE BEARS AMONG US

We relate our experiences—our history and relationships, including our relationships with nature and the natural world—through stories. Bears have been part of our stories and myths from our beginnings.

Paul Shepard and Barry Sanders place the bear in a cultural context in *The Sacred Paw: The Bear in*

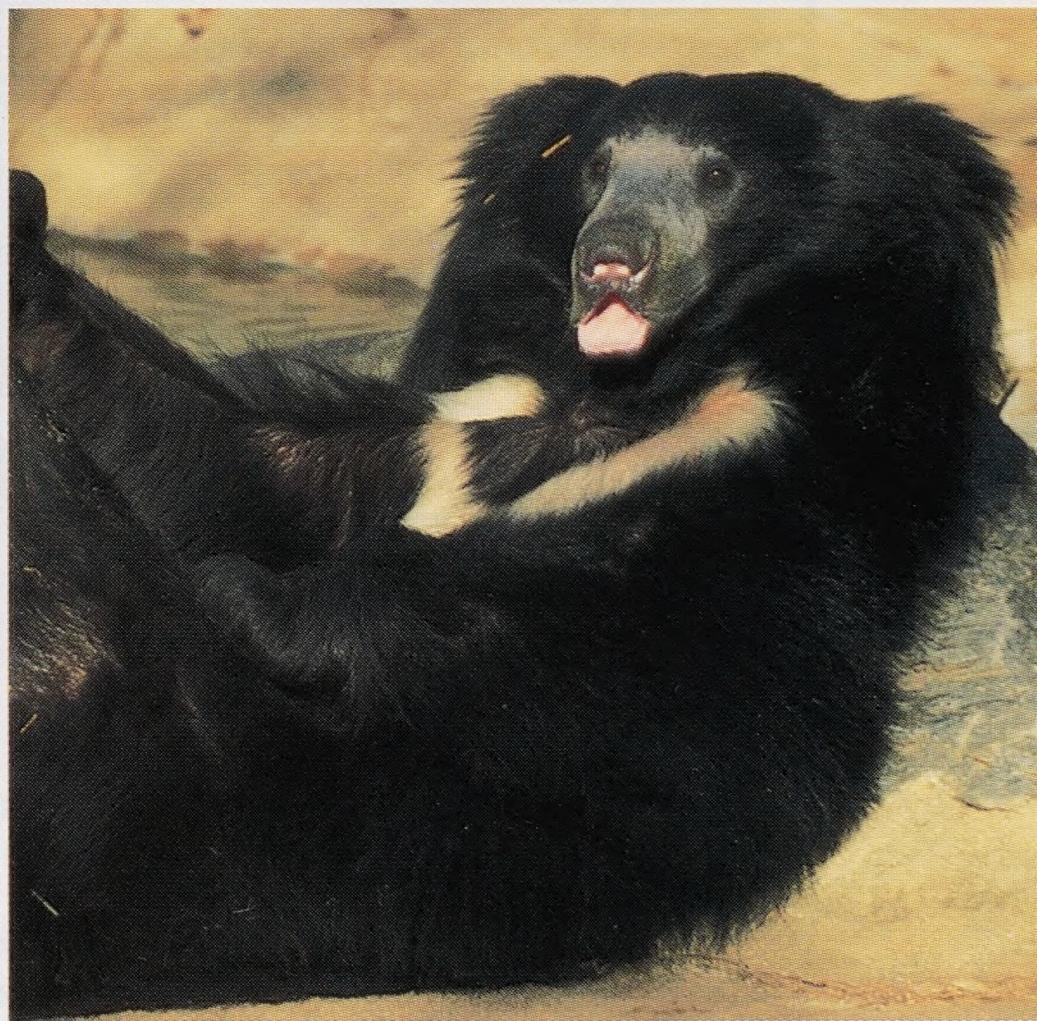
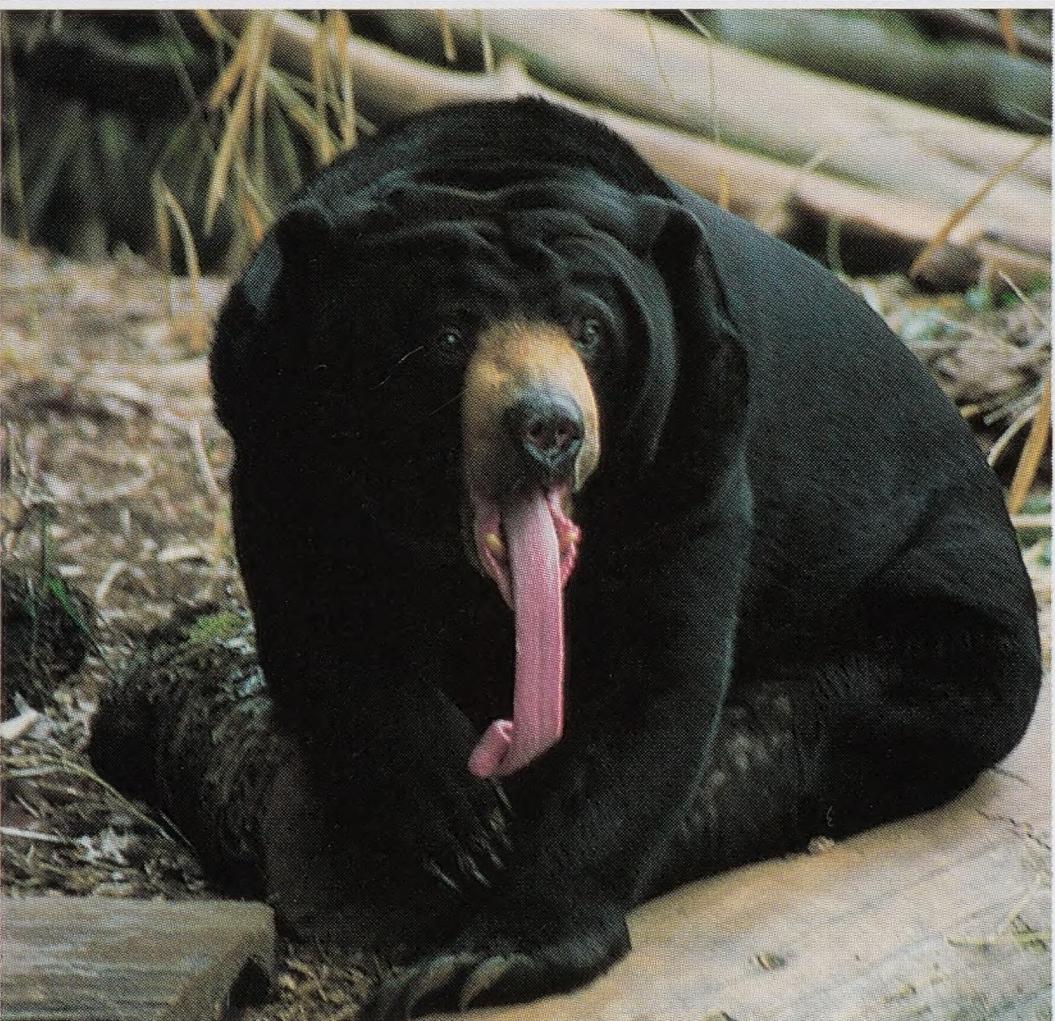
Nature, Myth and Literature. Bear myths

and rituals, they conclude, center on the theme of renewal, including the reincarnation of the soul, the symbolic replenishment of food, the passage of initiation, or the renewal of clan power. Bears are the symbolic image of brave deeds.

BY JOHN SEIDENSTICKER

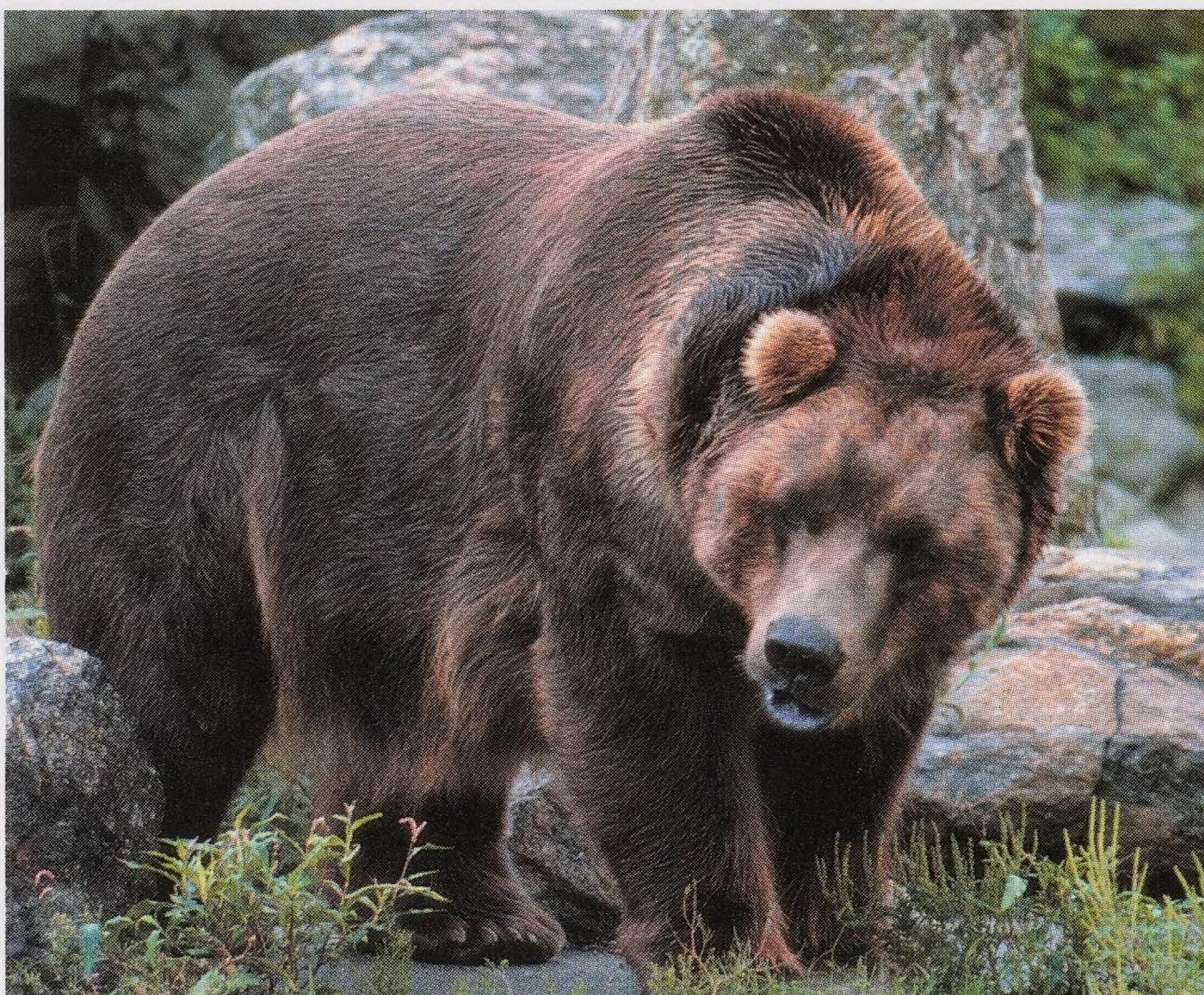
CLOCKWISE: GARY JACOB; ROBERT RATTNER; RUSSELL BURDEN; GARY JACOB; CORBIS/GALEN ROWELL; GARY JACOB; CORBIS/KIM SAYER; KAREN ANDERSON, NZP ARCHIVES





As a curator responsible for the stewardship of bears, I have some bear stories to tell about the relationships between these wonderful animals and ourselves. I fell in love with bears when I was working for John and Frank Craighead as a student assistant in the Yellowstone Grizzly Project 30 years ago. Each day we would go out and radiotrack bears and we spent long hours watching them. But there is nothing more

up-front and personal than a close encounter. When bears are startled they may stand up and look around, as we all know. Encountering a grizzly in open country one day was a special experience. The great bear stood and scanned the surroundings. Bear and I made eye contact. There was a connection in that instant—bear to me, me to bear—with only a few tens of yards and sage brush between us. To me this was the essence, the lyric core of being alive and with nature. I rec-



GARY JACOB

There is nothing more up-front and personal than a close encounter.

ognized that under that coat and long muzzle there was a self, not so different from me.

It is best to back off from an encounter like this, and, in my experience, bears also seem to know this. After the adrenaline subsides, there is time to consider what Shepard and Sanders have so eloquently written: "The bear strikes a cord in us of fear and caution, curiosity and fascination...a kind of ideogram of humankind in the wilderness, a thorough telling of what we were

and perhaps what we lost: wily, smart, strong, agile, and independent in ways that we humans left behind when we took up residence in the city." As a curator of bears, I reaffirm this connection with a bear nearly every morning when I make my rounds. So can you, with a visit to see our bears at the National Zoo.

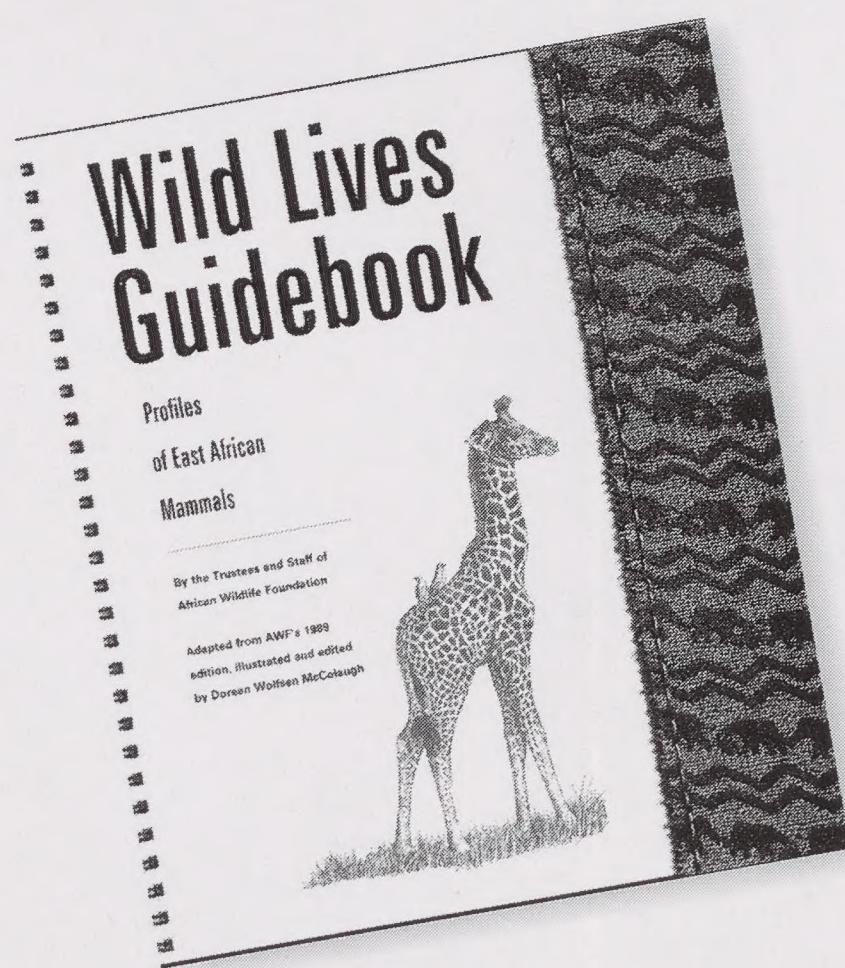
Another bear story. I remember watching a young grizzly sitting up with a three-gallon mayonnaise jar be-

tween its legs, slowly turning the lid off by feel with the flat of its paw while looking about to make sure a larger bear didn't come up and take this food away. For a young grizzly, the most dangerous animal, aside from man, is a larger bear. This bear was quizzical, almost comical as it confidently solved the jar-lid problem while keeping a cautious eye to potential danger.

While radiotracking, I gained additional appreciation of bears' problem-solving abilities.

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Wild Lives Guidebook was produced by the trustees and staff of the African Wildlife Foundation (AWF), one of the world's foremost authorities on African wildlife and the oldest conservation organization working solely in Africa. *Wild Lives Guidebook* is available at Patagonia, along with clothing and luggage for every adventure. All proceeds from the book go to the AWF.

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They have very good memories, memories that let them find food with great precision in time and space in large landscapes. Again, Shepard and Sanders: "The bear moves across the landscape and terrain like no other animal, a purposeful and mystical transit keyed to the plants and the season and tuned to the needs and possibilities of the seasons and celestial rhythms." For me, "bearness" is about solving problems over long time spans in vast areas, and I am envious of the bear's ability to do this.

The conservation of North American bears—American black bears, brown bears (including grizzlies), and polar bears—is seen as a success story. But the future is not at all secure for the spectacled bear in South America or the sloth bear, sun bear, brown bear, Himalayan black bear, and giant panda in Asia. Our ultimate goal at the Zoo is to work to secure a future for these bears on their home grounds. We can begin by developing partnerships that allow our Zoo to participate in achieving this goal, as Devra Kleiman describes in this issue of *ZooGoer* about our efforts for wild giant pandas.

Drawing refined road maps for the future of bears is complex because, as the context for bear conservation changes, new threats emerge. The old conservation prescription was to give bears wild lands in the form of reserves or parks and to stop killing them; essentially the goal was to keep bears and people apart, each in their own place. But explosive population growth and massive changes in the social and political landscape in Asia and South America during the last 50 years make this impossible. Parks and reserves will never be large enough, so the task is much more complicated than pursuing a simple set-aside of land. There is a reasonable amount of bear habitat left out there; the challenge is to devise ways for people and bears to share it. We need to see protected areas and zoos not as islands, but as vital core areas in networks of local, regional, national, and international bear conservation efforts.

Conservation does not occur in a vacuum. Bears are at risk because of a conflict over values. To understand the root causes of declining bear populations, we must look at how different people, especially the people who live near them, value bears. Local human needs must be identified so the presence of bears contributes to fulfilling those needs. Political will for conservation is accrued by building local support through the provision of cultural and economic benefits. Support for bear conservation must also be universal; people everywhere must help champion the cause of these magnificent animals. Environmental education, letting people get to know and love bears, is essential.

I know a good place to start. Come to the Zoo and get to know our bears. They are ambassadors for wild bears everywhere. *Z*

John Seidensticker is Curator of Mammals at the Smithsonian National Zoological Park. He has worked with large carnivores, including bears and tigers, for more than 30 years.



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GIANT PANDA

CONSERVATION

DEVRA G. KLEIMAN



The past few years have seen renewed attention focused on the biology and conservation of giant pandas and their unique habitat. A new survey of pandas and their habitat, training programs, and several new research initiatives have been proposed or initiated. The National Zoo hopes to be a major promoter of and collaborator in these efforts.

In 1993, the U.S. Fish & Wildlife Service (FWS) banned the import of giant pandas into the U.S.; the moratorium was imposed because of the commercial nature of the many short-term loans of giant pandas in the 1980s. The "rent-a-panda" phenomenon in North America started with a loan to the Los Angeles Zoo for the 1984 Olympics. The going

NDAY

TODAY

Precious little is known about the natural history of the world's smallest bear; but hunting, capture, and the disappearance of its rainforest habitat paint a disturbing picture for its future.

ORDER: Carnivora

FAMILY: Ursidae

GENUS AND SPECIES:

Helarctos malayanus

SUN BEAR

Physical Description:

In parts of its range, the sun bear is called the dog bear, probably due to the combination of its small size, short fur, long tongue, and short-haired gray or orange muzzle. The animal's coat is glossy black and less than a half-inch long. A gold, orange, or whitish "U" marks the chest. The sun bear's tongue is long, likely an adaptation used to gather honey and insects from within tree cavities. Bare soles and long, curved claws help it climb trees.

Size: Sun bears grow four to five feet long, stand about two feet high at the shoulder, and weigh 60 to 145 pounds. Males are a bit larger than females.

Geographic Distribution: The sun bear's exact distribution is unknown, but it has been found in many parts of Southeast Asia, including northern Burma, Laos, Cambodia, Vietnam, Thailand, peninsular Malaysia, and on the islands of Borneo and Sumatra. A few individuals may still linger in Bangladesh. Sun bears are likely extinct in southern China.

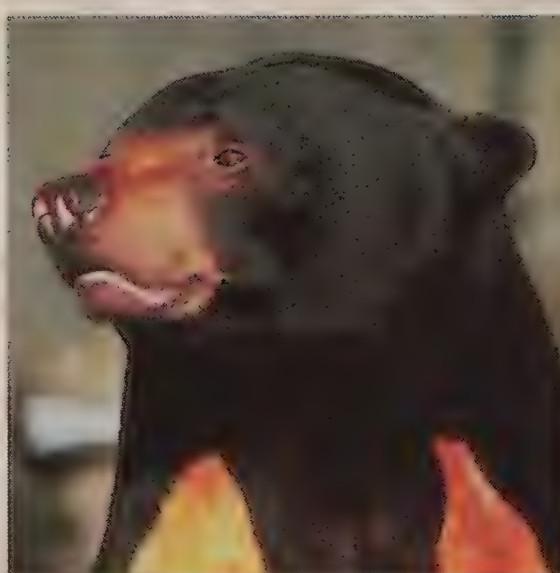
Status: The sun bear is listed as "data deficient" on the World Conservation Union's (IUCN's) Red List of Threatened Animals. This designation emphasizes how little scientists know about this bear's natural history, distribution, and decline.

Habitat: Sun bears inhabit lowland tropical rainforest.

Natural Diet: Sun bears are thought to eat a variety of rainforest fruits and vegetation, including palm shoots. They also feed on insects, honey, birds, and other small animals. In disturbed areas, they will raid farms, killing plantation palm trees to eat "heart of palm," or feasting on bananas, papayas, or garbage. These food raids often lead to conflicts with people.

Reproduction:

Very little is known about the sun bear's breeding biology. Young may be born throughout the year, perhaps



WOODLAND PARK ZOO

coinciding with the fruiting times of important trees. About three months after mating, female sun bears give birth to one or two young. Cubs stay with their mothers until adulthood.

Life Span: The sun bear's longevity in the wild is unknown, but individuals have lived up to 25 years in zoos.

Behavior: Active mostly at night, the sun bear likely spends much of its time searching for fruits and insects. It likely sleeps in trees, and often climbs in search of food, using its long claws to tear into bee nests and termite mounds. The most docile of the bears, sun bears are often captured when young and kept as pets, to their detriment.

A Few Sun Bear Neighbors:

BENGAL, SUMATRAN, AND INDOCHINESE TIGERS (*Panthera tigris tigris*, *Panthera tigris sumatræ*, and *Panthera tigris corbetti*): Depending upon where sun bears live, one of these tiger subspecies may share the same forest, and periodically prey on the bears.

RETICULATED PYTHON (*Python reticulatus*): One of the world's longest snakes, the reticulated python sometimes reaches more than 30 feet in length. This constrictor ambushes a variety of prey, including deer.

ELD'S DEER (*Cervus eldi*): A rare, skittish deer with a reddish coat. Males have long, bow-shaped antlers. Eld's deer live in low, marshy areas that adjoin or include lowland rainforest.

CLOUDED LEOPARD (*Neofelis nebulosa*): An arboreal feline with a marbled coat, the clouded leopard stalks small animals—and occasionally prey as large as wild pigs—in the steamy rainforest. Like the sun bear, little is known of its biology in the wild.

Fun Facts: The sun bear's creamy chest crescent inspired its common name.

A sun bear's legs are turned inward while walking.

Sun bears do not hibernate.



rate at that time was \$100,000 per month for two pandas.

The FWS believed that these loans were not contributing to giant panda conservation because rental pandas were being removed from the zoo and breeding center population, which was clearly not viable. Additionally, there was good evidence that some of the monies raised were not being spent on panda conservation. Finally, and most damaging, was the public misperception that giant pandas were being removed from the wild to support the rental program, thus potentially threatening the species' survival in the wild. The FWS decided to suspend imports while it developed a policy exclusively for this species, probably the most widely recognized wild animal in the world.

At the same time, other international conservation organizations, including the World Conservation Union (IUCN), the International Union of Zoo Directors (IUDZG), and the American Zoo and Aquarium Association (AZA), passed resolutions supporting a ban on short-term giant panda loans, the impetus being that the zoo panda population was not yet viable. Despite a population of more than 100 giant pandas in Chinese zoos and breeding centers, few infants were born each year and even fewer survived longer than one year. Concurrently, the AZA was developing a Species Survival Plan (SSP) for the giant panda and a coordinated North American zoo approach (the AZA Panda Plan) to support the conservation of the species in zoos as well as the wild.

Before the December 1993 FWS import ban, the San Diego Zoological Society signed an agreement with China's Ministry of Forestry and submitted an application to the FWS to import a pair of giant pandas on a ten-year breeding loan. Based on the quality of their research proposal, the FWS judged that San Diego's efforts would enhance giant panda survival and awarded the zoo an import permit in 1995. After a long delay, San Diego finally received its pandas in September 1996. This was the first pair of potentially reproductive giant pandas to enter the U.S. since 1972 when Ling-Ling and Hsing-Hsing arrived at the National Zoo as a state gift from the People's Republic of China.

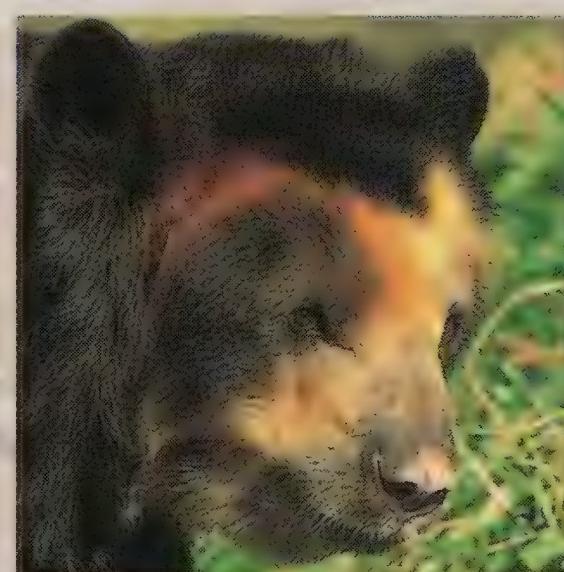
As part of their agreement with the Chinese, San Diego Zoological Society launched an impressive array of research studies focused on the zoo and wild pandas in the Wolong Nature

South America's only bear, the spectacled bear lives in the Andes, inhabiting a variety of habitats.

SPECTACLED BEAR

Physical Description:

Whitish or cream "spectacles" ring this bear's eyes. The light color variably extends down to the throat and chest, giving each individual a unique set of markings. The spectacled bear's thick coat is usually either black or brown, rarely tinged with red.



GARY JACOB

Size: Spectacled bears grow five to six feet long and stand two to three feet high at the shoulder. Males grow up to 30 percent larger than females, and weigh up to 340 pounds. Females rarely grow heavier than 180 pounds.

Geographic Distribution: Spectacled bears live in the Andes range and outlying mountain ranges, from western Venezuela south to Bolivia. A few have been reported from eastern Panama and extreme northern Argentina.

Status: The spectacled bear is listed as vulnerable on the World Conservation Union's (IUCN's) Red List of Threatened Animals.

Habitat: Spectacled bears live in a variety of mountain habitats. Many live between 6,000 and 8,800 feet above sea level, although others inhabit lower elevations. Habitat varies from rainforest, cloud forest, and mossy, stunted elfin forest to thorny dry forest. They will also forage in grassland habitats adjacent to forest.

Natural Diet: Fruits and bromeliads are favored foods, but spectacled bears also eat berries, grasses, bulbs, cactus flowers, insects, and small animals such as rodents, rabbits, and birds. Near settlements, bears sometimes raid corn fields.

Zoo Diet: The Zoo's spectacled bears eat a dry-food mixture (called chow), plus vegetables, including sweet potatoes and carrots, and fruits such as apples, oranges, and grapes.

Reproduction: Female spectacled bears mature between four and seven years of age. During breeding season, from April to June, a male and female will stay together for a week or two, mating often. Cubs—usually one or two—are born from November to February.

Life Span: The spectacled bear's longevity in the wild is unknown, but individuals have lived up to 36 years in zoos.

Behavior: Primarily nocturnal, spectacled bears climb trees and forage on the ground. They also build stick platforms, which are used for reaching elevated food and for sleeping. Spectacled bears tear open masses of bromeliads with their sharp claws. Outside breeding season, they travel alone. During the day, spectacled bears sleep in secluded spots, such as in tree cavities, on tree platforms, between large, exposed tree roots, or in dens dug into cliff faces.

A Few Spectacled Bear Neighbors:

ANDEAN COATI (*Nasua olivacea*): A brown-coated forest dweller of the high Andes. Females and young travel in social groups; adult males travel alone. While foraging on the ground, these animals hold their ringed tails high in the air.

MOUNTAIN TAPIR (*Tapirus pinchaque*): Another mammal unique to the Andes, this thick-coated, small pony-sized vegetarian lives in mountain forests up to the treeline.

PUMA (*Puma concolor*): This shy predator stalks a variety of game in a variety of habitats, including the bears' forest homes. South America's most formidable predator, the jaguar (*Panthera onca*) also lives in bear habitat, but usually only up to about 6,000 feet.

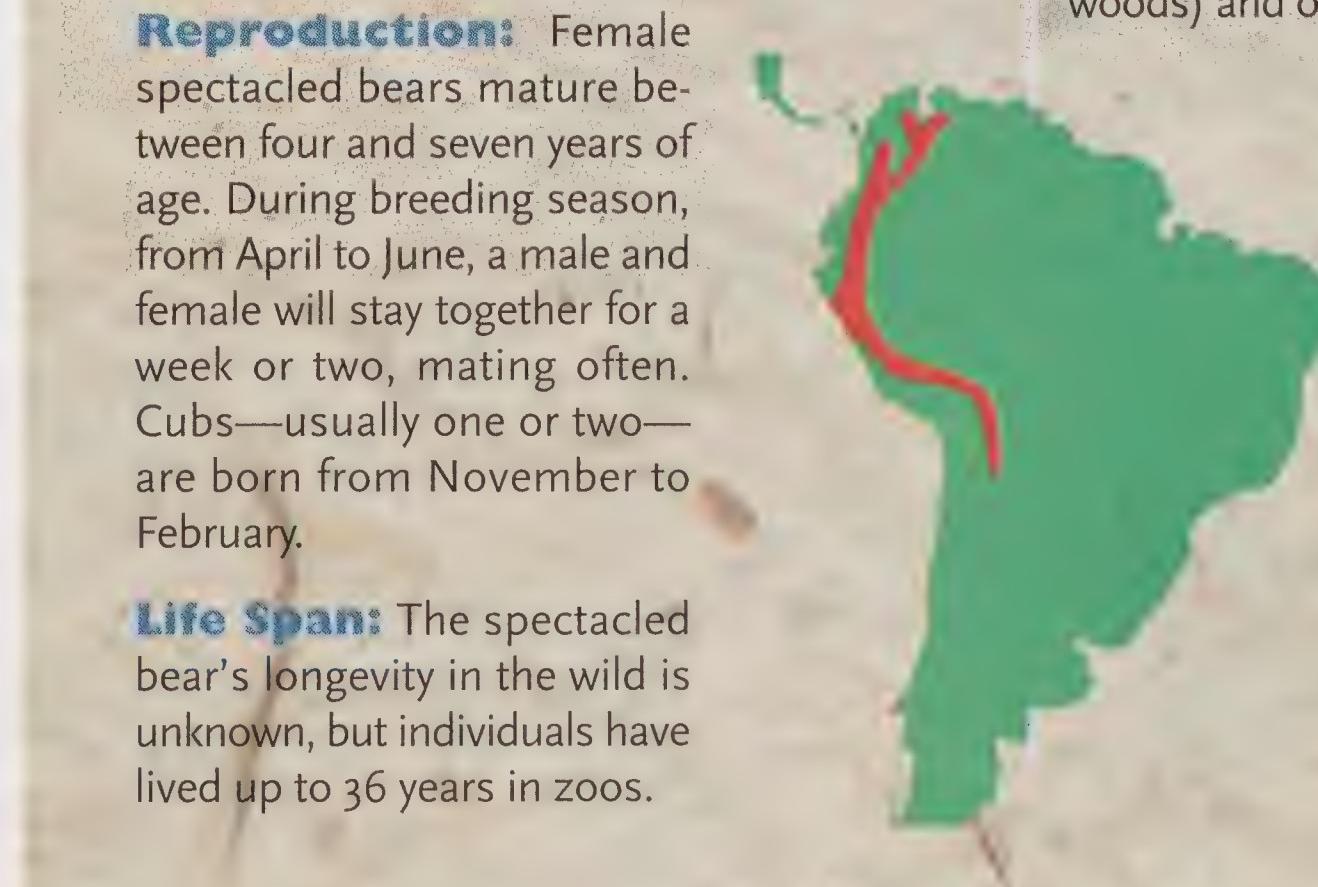
ANDEAN CONDOR (*Vultur gryphus*): The wide-ranging condor, one of the world's largest flying birds, glides and soars high over open, mountainous terrain, looking for carrion.

Fun Facts: The variability in spectacled bears' markings and color led some Peruvians to think two bear species lived in their country—one carnivorous and one vegetarian.

The spectacled bear is an important seed disperser, passing on seeds of laurels (valued hardwoods) and other plants through its droppings.

The spectacled bear is the only surviving member of the short-faced bear subfamily, which thrived until about 10,000 years ago.

Each individual spectacled bear has its own distinctive set, or "fingerprint," of distinct cream or whitish markings on its head, throat, and chest.



Reserve in Sichuan. Research topics have ranged from chemical communication and the use of den sites to the hormonal changes accompanying estrus. The panda pair at the San Diego Zoo has not yet bred naturally; to date, artificial insemination has also proven unsuccessful.

The Chinese government and the international conservation community have justified the export of giant pandas, on short- or long-term loans, as a means of raising money to support the conservation of wild giant pandas. More than ten years ago, the Chinese estimated the cost of creating and improving reserves to save giant pandas at \$100 million (in 1992 dollars). A zoo has therefore been expected to contribute in excess of \$1 million per year for the loan of a pair of pandas.

The World Wide Fund for Animals (WWF), whose logo is a giant panda, began to support research and conservation programs for giant pandas in 1980. After a lull in activities during the early 1990s, it has been working since 1984 on a model program using a participatory planning process with local communities that exist near remaining giant panda habitat in Sichuan province. The hope is that eventually people can not only coexist and support the maintenance of populations of giant pandas, but profit economically from this unique natural resource through ecotourism and other types of sustainable development.

Also, WWF has contracted with China's State Forestry Administration to begin the first census of giant pandas since 1988 and to survey remaining giant panda habitat through use of the new Geographic Information Systems technology. For more than 20 years, we have been saying that about 1,000 giant pandas survive in the wild, despite the fact that nearly 50 percent of their habitat has been destroyed during this interval. The new survey will reveal whether that remains a good estimate of giant panda numbers.

Finally, WWF has been contributing to the dialogue about giant panda reintroduction. In November 1997, it sponsored a workshop to determine the conditions under which reintroduction would be an appropriate strategy for giant panda conservation.

An ongoing problem is that giant pandas in zoos and breeding centers still demonstrate poor breeding performance and are not managed as a single unit. To assist with the development of a

Giant pandas are black-and-white bears that live in temperate bamboo forests in China. Among the best recognized—but rarest—animals in the world, they have come to symbolize endangered species and conservation efforts.

ORDER: Carnivora**FAMILY:** Ursidae**GENUS AND SPECIES:***Ailuropoda melanoleuca*

GIANT PANDA

Physical Description: Giant pandas' ears, eye patches, muzzles, legs, and shoulders are black. The rest of the animals' coats are white. Giant pandas have large molar teeth and strong jaw muscles for crushing tough bamboo. Many people find these chunky, lumbering animals to be cute, but when threatened, giant pandas can be as dangerous as any other bear.



Size: Giant pandas stand between two and three feet tall at the shoulder (on all four legs), and reach four to six feet long. Males are larger than females, weighing up to 250 pounds in the wild. Females rarely reach 220 pounds.

Geographic Distribution: Giant pandas live in a few mountain ranges in central and western China, mainly in Sichuan, Shaanxi, and Gansu provinces.

Status: The giant panda is listed as endangered in the World Conservation Union's (IUCN's) Red List of Threatened Animals. There are about 1,000 left in the wild, and about 120 in zoos and breeding centers.

Habitat: Giant pandas live in bamboo forests at elevations between 3,600 and 10,500 feet. They once lived in lowland areas, but farming, forest clearing, and other development now restrict giant pandas to the mountains.

Natural Diet: Wild giant pandas feed almost entirely on bamboo. Sometimes, wild giant pandas also eat bulbs, grasses other than bamboo, and small animals.

Zoo Diet: Keepers feed Hsing-Hsing bamboo, rice gruel, carrots, apples, and sweet potatoes.

Reproduction: Male and female giant pandas mate only in the spring. During that time, females are interested in mating for only two or three days. Calls and scent marking draw males and females to each other. Female giant pandas give birth between 95 and 160 days after mating. Although females may give birth to two young, only one usually survives. Giant panda cubs may stay with their mothers for up to two years before striking out on their own. Giant pandas' slow breeding rate is a major reason why their populations cannot quickly recover from hunting and other causes of mortality.

Life Span: Scientists aren't sure how long wild giant pandas live, but Chinese scientists have reported zoo pandas as old as 35. The National Zoo's Hsing-Hsing turned 28 in 1999.

Behavior: Millions of National Zoo visitors enjoy watching Hsing-Hsing eat. Like other giant pandas, he usually feeds while sitting upright, in a

pose that resembles how humans sit on the floor. This posture leaves his front paws free to hold bamboo stems while he chews. Like Hsing-Hsing, wild pandas spend much of their days resting, feeding, and seeking food. Some scientists speculate that giant pandas' bold black-and-white coloring may help the animals blend with their shade-dappled snowy and rocky surroundings.

Until recently, scientists thought giant pandas spent most of their lives alone, with males and females meeting only during the breeding season. Recent studies paint a different picture, in which small groups of pandas share a large territory and sometimes meet outside the breeding season. Much remains to be learned about the secret lives of these elusive animals, and every new discovery helps scientists in their battle to save this species.

A Few Giant Panda Neighbors:

RED PANDA (*Ailurus fulgens*): A reddish, raccoon-sized tree-climber once thought to be a giant panda relative. While scientists now believe giant pandas are bears, recent findings indicate that red pandas may be most closely related to raccoons. Red pandas can be seen at the Zoo, where more than 100 have been born since 1972.

TAKIN (*Budorcas taxicolor*): A large, shaggy, goat-like animal.

GOLDEN MONKEY (*Pygathrix roxellana*): A long-haired monkey that lives in large groups.

TUFTED DEER (*Elaphodus cephalophorus*): A small chocolate-brown deer with white ear tufts.

GOLDEN PHEASANT (*Chrysolophus pictus*): A dazzling bird with a red belly, yellow head, and a long tail.

Fun Facts: Ling-Ling and Hsing-Hsing were a gift from China, and arrived at the National Zoo in 1972, when they were two years old and one year old, respectively. Hsing-Hsing, the male, still lives at the Zoo. Ling-Ling died in 1992.

Except for marsupials (kangaroos, possums, and their kin), giant panda babies are the smallest mammal newborns. Giant pandas are born blind and weigh four to six ounces—lighter than an apple! Baby giant pandas grow slowly, reaching adult weight by two to four years of age.

Adult giant pandas eat up to 40 pounds of food each day and zoo pandas can weigh up to 350 pounds.

Giant pandas grip long bamboo stems with their claws and a long wrist bone that acts like a thumb. Watch Hsing-Hsing at feeding time and you can see this bone put to good use!

long-term zoo management plan, the Conservation Breeding Specialist Group (CBSG) of the IUCN led a workshop for representatives from Chinese zoos in December 1996. At the workshop, the participants began the process of evaluating the zoo panda population individual by individual. The workshop led to biomedical surveys to assess the health and reproductive potential of a portion of that population in 1998 and 1999. The CBSG hopes to continue assisting in the evaluation of the zoo panda population and to facilitate the development of a long-term master plan for both the zoo and wild populations.

Several other U.S. zoos are supporting conservation activities for giant pandas in China. Zoo Atlanta is sponsoring research to determine why male giant pandas reproduce so poorly in zoos. The Columbus Zoo is funding some census work and infrastructure within one giant panda reserve. One of the greatest problems of Chinese national reserves for giant pandas is the lack of infrastructure for staff to carry out their work. Without housing, roads, equipment, and vehicles, staff cannot monitor panda habitat to prevent further logging and poaching of pandas and other native species.

And what efforts have been and are being made by the National Zoo? Over a 28-year period, we have contributed enormously to the sum of knowledge about giant pandas and to their conservation. With generous support from Friends of the National Zoo, we have published dozens of scientific papers based on our own research, sponsored workshops and symposia, supported research by Chinese colleagues, trained Chinese students and wildlife managers, been major contributors to the development of national and international policies, such as the AZA Giant Panda Plan, and helped to carry out the biomedical surveys



mentioned above.

Today, the Zoo is about to embark on a major expansion of its studies of panda biology and its efforts to save pandas in the wild. We are currently preparing research proposals to study panda behavior and physiology as well as to perform an analysis of panda habitat that will answer some of the perplexing questions about why this species is in decline. We are also focusing on providing training for our Chinese colleagues in giant panda behavioral ecology, wildlife management, conservation biology, zoo management, and veterinary care. Last, we are planning innovative education programs to raise public awareness of the species' plight.

We hope to continue to promote the expansion

sion and viability of the zoo giant panda population through cooperative breeding loans with Chinese and other international institutions so

FWS, Chinese government, and international policies and procedures directed toward the ultimate survival of a viable population of this species in the wild.

Eventually, every one of us should have the miraculous opportunity, as I have, to see this magnificent animal perched

high atop a swaying conifer in its natural mountainous bamboo-covered home. 

Devra Kleiman is Senior Research Scientist in the Smithsonian National Zoo's Department of Zoological Research. She has studied giant pandas since they came to the Zoo in 1972. She has visited China regularly to work on giant pandas and their conservation since 1978.

...the Chinese estimated the cost of creating and improving reserves to save giant pandas at \$100 million.

that the world zoo population will thrive and many more institutions can share in working with and educating their public about this unique animal.

As part of this effort, we hope to see breeding giant pandas return to the National Zoo here in Washington, D.C. The FWS published a new giant panda import policy in 1998, opening the door for giant pandas to enter the U.S. But such an event can only occur within the context of AZA,



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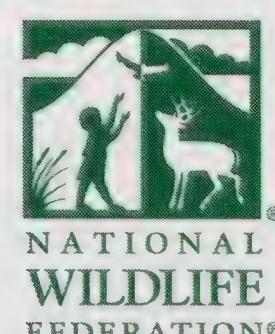


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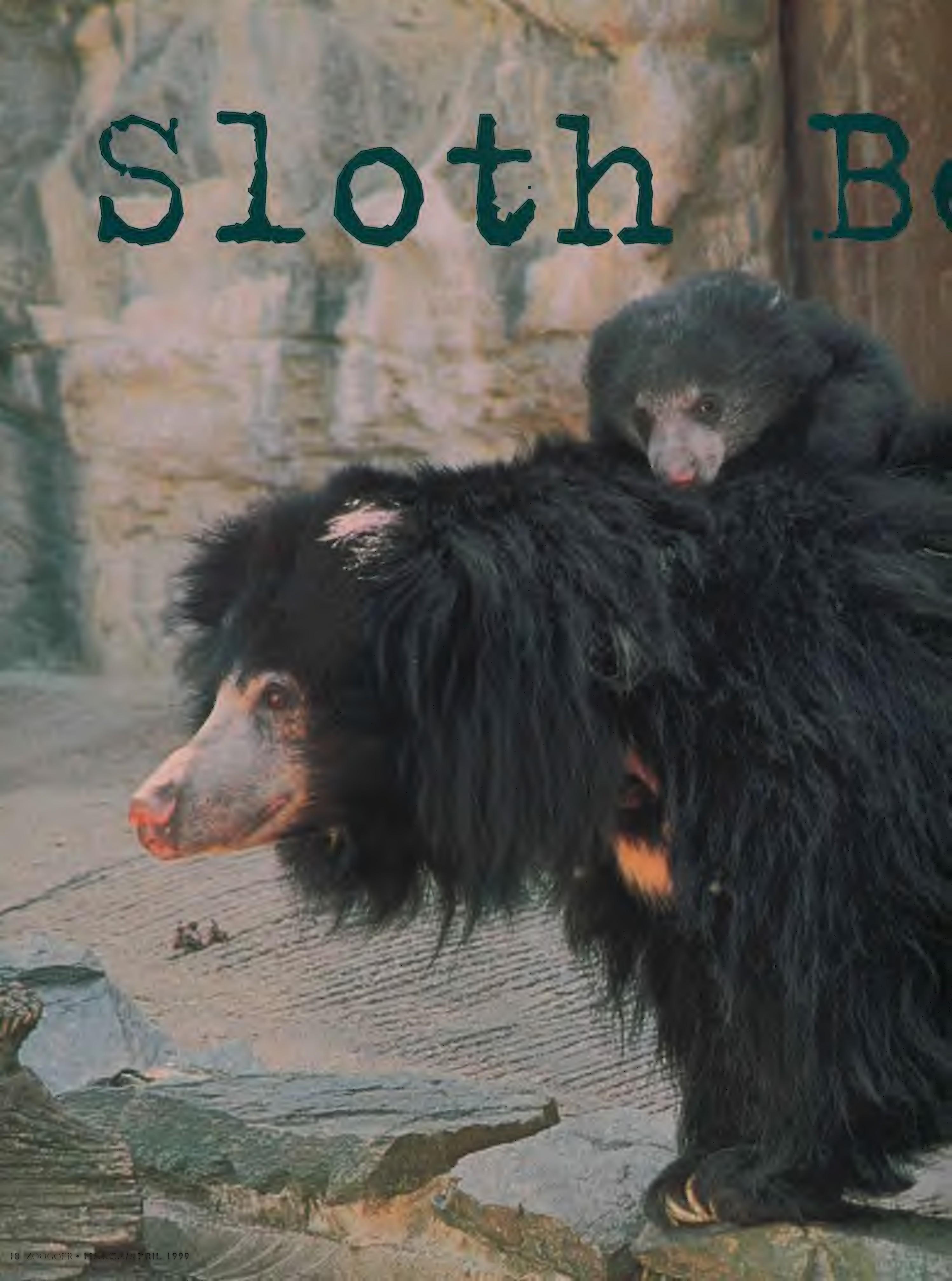
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Sloth Bear





bears

BY JOHN SEIDENSTICKER

Sloth bears are not sloths. They are bears that live on the Indian subcontinent including the island of Sri Lanka. The various species of sloths live in South America. So why the name "sloth bear?"

Much 18th-century Western knowledge about tropical animals came from the study of specimens sent by curious naturalists from distant ports-of-call to Europe's great museums. Consider the wonder, and subsequent confusion, when a Mr. A. Seba opened a shipping crate, newly arrived in Europe by sailing ship from Ceylon (Sri Lanka) by way of a landfall on the east coast of South America. This was the normal route in the 1700s for ships of the Dutch East India Company travelling from Asia to Europe around southern Africa's Cape of Good Hope.

Disheveled in appearance, the sloth bear leads a reclusive life in India's forests, noisily seeking out insects and fruits.

ORDER: Carnivora

FAMILY: Ursidae

GENUS AND SPECIES:

Melursus ursinus

SLOTH BEAR

Physical Description:

Sloth bears have shaggy, dusty-black coats, pale, short-haired muzzles, and long, curved claws used to excavate ants and termites. A cream-colored "V" or "Y" usually marks their chests. Sloth bears' nostrils can close, protecting the animals from dust or insects when raiding termite nests or bee hives. A gap in their incisor teeth enables them to suck up ants, termites, and other insects.

Size: Sloth bears grow five to six feet long, stand two to three feet high at the shoulder, and weigh from 120 (in lighter females) to 310 pounds (in heavy males).

Geographic Distribution: Sloth bears live in India, Sri Lanka, and Nepal, and they have been reported in Bhutan and Bangladesh.

Status: The sloth bear is listed as vulnerable on the World Conservation Union's (IUCN's) Red List of Threatened Animals.

Habitat: Sloth bears live in a variety of dry and moist forests, and also in some tall grasslands, where boulders and scattered shrubs and trees provide shelter.

Natural Diet: When trees are in fruit, usually during the monsoon season, sloth bears dine on mango, fig, ebony, and other fruits, and also on some flowers. However, ants and termites, dug out of their cement-hard nest mounds, are year-round staples. Also, sloth bears climb trees and knock down honeycombs, later collecting the sweet bounty on the forest floor. Beetles, grubs, and other insects round out their diet. During food shortages, sloth bears will eat carrion. They sometimes raid farm crops.

Zoo Diet: The Zoo's sloth bears eat a dry food mixture (called chow) plus fruits such as oranges, apples, and grapes, and some vegetables.

Reproduction: Sloth bears mate during the hot season—May, June, and July—and females usually give birth to two cubs six to seven months later. Cubs are born in an underground



GARY JACOB

den, and stay there for two to three months. After emerging from the den, cubs stay at their mother's side for two to three years before heading off on their own.

Life Span: It is unknown how long sloth bears live in the wild. But these bears have lived up to 40 years in zoos.

Behavior: Active mostly at night, the sloth bear is a noisy, busy bear. It grunts and snorts as it pulls down branches to get fruit, digs for termites and ants, or snuffles under debris for grubs and beetles. Sloth bears lead solitary lives, and most are nocturnal. (In protected areas, they may be active during the day.) If threatened, these smallish bears will stand on two legs, brandishing their clawed forepaws as weapons.

A Few Sloth Bear Neighbors:

BENGAL TIGER (*Panthera tigris tigris*): At the top of the forest food chain, this mighty, endangered cat slinks through the shadows in search of spotted deer and other prey, which sometimes includes sloth bears.

GAUR (*Bos frontalis*): A massive, forest-dwelling wild ox that lives in small herds and feeds in clearings at night.

LION-TAILED MACAQUE (*Macaca silenus*): An endangered, black-coated monkey with a distinctive gray mane and dangling tail. Troops of 12 to 20 inhabit tropical evergreen forests in India's Western Ghats mountains.

GREAT PIED HORNBILL (*Buceros bicornis*): A vulture-sized black, white, and cream-colored fruit-eating bird with a massive, toucan-like bill.

Fun Facts: Sloth bears are the only bears to carry young on their backs.

In the late 1700s, the first Europeans to see sloth bears described them as bear-like sloths due to their ungainly appearance and long claws. The Hindi word for bear—*bhalu*—inspired the name of Rudyard Kipling's bear character Baloo in *The Jungle Book*.



Mr. Seba was impressed with his new specimen's long, curved, ivory-colored claws, similar to those possessed by sloths, so he called this a sloth from Ceylon when he described it in 1734. D. P. Erdbrinek, the taxonomist who ferreted out this story, believed Mr. Seba may have been victim of a seafarer's prank because the "specimen" turned out to be "...the mutilated parts of an Aswail [sloth bear] from Ceylon together with parts of a [South American] three-toed sloth...." This error was not soon corrected and was even compounded when other early taxonomists, confused about the specimen's origins, thought it was a creature from Africa.

The first valid scientific description, by George Shaw in 1791, called this strange creature Ursine Bradypus. Ursine means bearlike, while Bradypus (literally, slow foot) is the genus name of three of the species of sloths. Shaw thought that the bear was a sloth, primarily based on the shared characteristic of lacking the two first upper incisors. Time, and additional specimens, eventually revealed the true taxonomic relationships, but the confusing common name remains the English tag for this mysterious bear.

What is the story with those long, curved, ivory-colored claws and missing upper incisors that, coupled with a shaggy black coat, nearly naked nose, and protrusible lips, so befuddled those early scientists? Our studies of wild sloth bears show that, unlike sloths, which eat leaves while hanging high in rainforest trees, sloth bears are specialized feeders on ants, termites, bees, and, seasonally, fruits. They use their long curved claws to carefully dig out and open ant and termite nests on the ground, then hurry to suck up the insects by sucking and blowing, a process that sounds like a jack-hammer and is made possible by those protrusible lips and missing incisors. These bears also use their claws to climb tall trees to reach bees' nests, rich in honey and bee larvae. The nearly furless brown nose doesn't get gummed-up with the defensive excretions of termite soldiers, while the long shaggy coat wards off insect attacks.

One endearing sloth bear trait is that the female carries her young cubs on her back. (This is a behavior characteristic of other ant-eating mammals such as the South American giant anteater.) They do so presumably because a female must cover long distances each night as she travels between the many ant and termite nests she must visit to obtain enough to sustain her and

AMERICAN BLACK BEAR

her young. (The average litter size is 1.5, equally divided between litters of one or two.) She can linger only so long at each nest, blowing and sucking in ants or termites, before the ant or termite soldiers amass and attack in sufficient numbers to make a longer stay unpleasant.

Sloth bears also live where other large dangerous carnivores live: tigers, leopards, and wild dogs on the subcontinent and leopards in Sri Lanka. These large carnivores readily kill sloth bears if they can catch them, and riding on the mother's back seems a good way to keep cubs close during the nightly search for ant and termite nests.

I met an adult female sloth bear one day while radiotracking tigers from elephant back in Royal Chitwan National Park in the lowlands of Nepal. She was 30 feet up in a tall bombax tree, out on a limb, knocking pieces of a bees' nest to the ground. Her cubs were below, eating the wax, honey, and larvae. She immediately saw and smelled us and "wooffed" to her cubs, who rushed off into the 20-foot-tall grass beside the trail. Then she descended from the tree and charged the elephant, only veering off into the grass when my elephant man launched the elephant into a dead run straight at the bear.

There were several lessons in this flash encounter, not the least of which was that an immediate offensive move is sometime the best defense. But why not have the cubs climb in response to a perceived threat? I have often seen American black bear females send their cubs up trees when they sensed a threat. The answer may be that sloth bear cubs and even females in a tree remain vulnerable to predators, especially to leopards, which readily climb.

The threat posed by these large carnivores may also explain another curious sloth bear habit. We know from our Zoo sloth bears that they can live quite well on a "typical" bear diet. Black and brown bears readily eat carrion of large ungulates such as deer and elk, especially in the spring when animals that died over the winter are exposed. However, wild sloth bears usually do not feed on carrion. In sloth bear country, a big dead deer usually belongs to a tiger or a leopard—an animal to be avoided.

We know little about the status of the sloth bear on its home ground. My colleague Andrew Laurie and I studied sloth bears in Chitwan National Park in the early 1970s. Fifteen years elapsed before Anup Joshi and his advisors, David

Physical Description:

American black bears usually have black coats. In western North America, cinnamon-, blond-, and honey-colored bears occur, while white- and bluish-gray-coated animals are found along Canada's Pacific coast. On some animals, a white blaze punctuates the chest. Dexterous toes and lips and a long tongue enable American black bears to gather berries and insects they dig up after ripping open rotting logs or honey combs with their strong, curved claws.

Size: American black bears vary in size depending on sex, food availability and quality, and other factors. Male black bears may grow 20 to 60 percent larger than females, and can grow more than six feet long and weigh up to 650 pounds. Females rarely reach that length, and do not weigh more than 175 pounds. Black bears stand around three feet tall at the shoulder.

Geographic Distribution: American black bears range from Alaska and much of Canada south to mountains in northern Mexico. Historically, they did not inhabit southwestern deserts. Today, they are now gone from large parts of the central and eastern U.S.

Status: Unlike the other seven bear species, many American black bear populations are thriving. Only the isolated Louisiana, Texas, and Mississippi populations are listed as threatened by the U.S. Fish & Wildlife Service. However, other unlisted but scattered populations, such as those in Florida, are vulnerable to poaching, habitat loss, and roadkill deaths. Some estimates put the continent's black bear population at about a half million.

Habitat: Highly adaptable and with varied food tastes, the American black bear inhabits a wide range of habitats, including arid scrub, southern swamps, and dense coniferous and deciduous forests.

Natural Diet: The American black bear's diet is varied, but mostly vegetarian, including twigs, roots, berries, young plants, and buds. Insects—from beetles to ants to bee larvae eaten with honey—are also important. Small mammals and fish augment the diet, when they are easily caught.

Reproduction: American black bears mate during the early summer months. Females mature after three to four years, and usually give birth to two cubs, every other year. Young are born in mid-winter in



RUSSELL BURDEN

the female's den, and stay with their mothers for about a year (including up to five months in the winter den). Although slow breeders, American black bears reproduce faster than brown bears, which helps them sustain hunting and other pressures.

Life Span: American black bears live up to 32 years in the wild. The Zoo's famous Smokey the Bear lived to about 27 years.

Behavior: In late summer and fall, American black bears wander far and wide searching for high-protein foods such as acorns. They build fat layers, then retreat to a den, dead tree, or thicket to sleep during colder months (or days in warmer, southern areas). Most American black bears are crepuscular—active around dawn and dusk. In areas of heavy hunting, however, they adapt to nighttime hours. American black bears, except for females with young, generally forage alone. Adult males do not tolerate other bears, except during breeding season. Females tolerate other bears except for unrelated females.

A Few American Black Bear Neighbors:

BROWN BEAR (*Ursus arctos*): In the west, this bear competes for food, and is an occasional predator of black bears.

BOBCAT (*Lynx rufus*): A widespread, lanky house-cat-sized predator that stalks birds, rodents, and other small animals. Bobcats live in a variety of habitats, from forest to marsh to scrub.

MOOSE (*Alces alces*): In the north and west, American black bears often share habitat with the largest North American deer. Rarely, the bears catch and eat young moose.

GOLDEN EAGLE (*Aquila chrysaetos*): A mighty, predominantly western, winged predator that hunts rabbits, marmots, and other small animals, and, rarely young deer.

EASTERN CHIPMUNK (*Tamias striatus*): A small forest rodent that, like the American black bear, often seeks acorns and other forest plant matter. Farther west, the eastern chipmunk's shoes are filled by 20 other species of small mammals.

Fun Facts: Every year or two, a few wandering bears, mostly young males, reach the Washington, D.C., area—which lies some 60 miles from the nearest bear enclaves!



A mid-sized black bear with an extensive range but troubled future.

ORDER: Carnivora

FAMILY: Ursidae

GENUS AND SPECIES:

Ursus thibetanus

ASIATIC BLACK BEAR

Physical Description:

The Asiatic black bear looks much like the American black bear, but has wider, more pronounced ears and a distinctive white or cream "V" on its chest. Strong forelimbs and sharp claws help this husky animal climb trees.

Size: Asiatic black bears grow four to six feet long. Males weigh from 220 to 480 pounds, while females range from 110 to 275 pounds.

Geographic Distribution: Asiatic black bears have an extensive but now-disjunct range. In south Asia, they are found from Afghanistan, Pakistan, northern India, Nepal, and Bhutan east to Vietnam and northeast China. To the north, they live in southeast Russia, on Taiwan, and on the Japanese islands of Honshu and Shikoku.

Status: The Asiatic black bear is listed as vulnerable on the World Conservation Union's (IUCN's) Red List of Threatened Animals.

Habitat: Asiatic black bears generally live in temperate mountain forests, and also frequent brushy areas. They occur as high as 9,900 feet, but are also found in lowlands.

Natural Diet: Depending upon the season and availability, Asiatic black bears take advantage of a variety of foods, primarily from plants. In fall, they fatten themselves on acorns, chestnuts, walnuts, and other fat-rich resources. They climb trees to get these foods, as well as picking them from the forest floor. In spring, new plant growth provides a bounty for the bears, which seek out bamboo, raspberry, hydrangea, and other plants. They also raid rodents' caches of acorns or collect those left on the forest floor from the previous fall. Other plants offer food in summer, including raspberries, cherries, and grasses. Insect food, especially ants, augments the summer diet. Asiatic black bears will eat carrion, and sometimes attack livestock.

Reproduction: Asiatic black bears do not usually breed until three or four years old. In the north, breeding season begins in early summer; young are usually born in the mothers' winter dens. However, this schedule varies. In Pakistan, for instance, mating may take place in fall. Young stay with their mothers for two to three years, and females with first-year



CORBIS/ROBERT FRANZ

young do not usually breed the next season.

Life Span: Asiatic black bears have lived more than 30 years in zoos. However, their longevity in the wild is unknown.

Behavior: Many Asiatic black bears migrate seasonally, spending warmer months

at higher elevations, then descending during colder months. During the fall, bears living in disturbed areas that lack sufficient acorns and other foods may raid nearby farms, killing trees and eating corn. During the coldest months, they usually retreat to a den in a hollow tree or cave. Depending upon elevation and latitude, bears may sleep up to five months (in Japan). In the southern parts of their range, Asiatic black bears may not den during the winter.

A Few Asiatic Black Bear Neighbors:

BROWN BEAR (*Ursus arctos*): Asiatic black bears and brown bears share habitat in many areas. The smaller black bear has an advantage over its larger competitor thanks to its climbing skills, which help it reach nuts and fruit high in the trees.

NUTCRACKER (*Nucifraga caryocatactes*): A jay-sized crow relative that lives in Eurasian coniferous forests, feeding on pine seeds, hazel nuts, insects, worms, and, on occasion, the eggs and young of other birds.

YELLOW-THROATED MARTEN (*Martes flavigula*): This squirrel-sized weasel relative climbs trees and feasts on young birds, eggs, rodents, frogs, and also honey and fruit.

Fun Facts: The Asiatic black bear is the American black bear's closest cousin. Both are thought to have evolved from a common European ancestor.

Asiatic black bears share giant panda habitat in China's Wolong Reserve, where they feed, among other things, on bamboo—their more specialized relatives' favorite food.

During their fall feeding frenzy, Asiatic black bears snap tree branches as they climb trees looking for food. The popping sounds can be heard across the valleys where bears occur. The bent-back branches provide crude platforms for the tree-feeding bears.



Garshelis and David Smith from the University of Minnesota, took up the challenge of studying these bears, also in Chitwan. These investigators learned that sloth bears can adapt their diet to changing food availability. Termites were more dominant in their diet, and fruits less so, than they were 20 years before. In that time, most of the livestock had been removed from the park, and as a result, the park's plant composition changed, with fruiting plants declining in number. The bears appeared to respond by eating more termites.

Half way around the world from my Nepal field site, I was at the National Zoo when a sloth bear cub was born here. The cub's emergence from the den



BEARS HAVE INSPIRED MAN'S ART AND OTHER CREATIONS FOR AGES. THE CHINESE BEAR-FOOTED BRONZE DING WAS MADE BETWEEN B.C. 206 AND 220 A.D. MEANWHILE, AROUND THE GLOBE AND CENTURIES LATER NATIVE AMERICANS CRAFTED THESE RATTLES WITH WOOD, PAINT, AND HAIR.

By Howard Youth

Supremely adapted to ice floes and frozen shores, the polar bear—the largest land carnivore and most carnivorous bear—ranges widely across the Arctic wilderness, seeking seals and other prey

ORDER: Carnivora

FAMILY: Ursidae

GENUS AND SPECIES:

Ursus maritimus

POLAR BEAR

Physical Description:

The polar bear is one of the world's few all-white animals. Only its eyes, nose pad, and lips are black; although beneath its white fur, its skin is also black. The bear's white coat, which helps it blend with its icy environs, is thick, and covers a thick fat layer. These two adaptations enable polar bears to survive harsh Arctic winters that average -30 degrees Fahrenheit. Partially webbed feet assist in swimming, which polar bears can do for long distances. Like other bears, the polar bear relies on a keen sense of smell to sniff out prey. Its large body size helps it conserve heat, while its long neck helps it view its open habitat, both while on land and while swimming. Polar bears put their sharp claws to good use when grabbing prey and loping across the slippery ice.

Size: Male polar bears are much larger than females. Adult males grow eight to almost nine feet long, while females grow to about six feet long. Males weigh 800 to 1,400 pounds, whereas females are about half the male's weight, from 440 to 650 pounds. On two legs, a large male polar bear may stand ten feet or, rarely, taller.

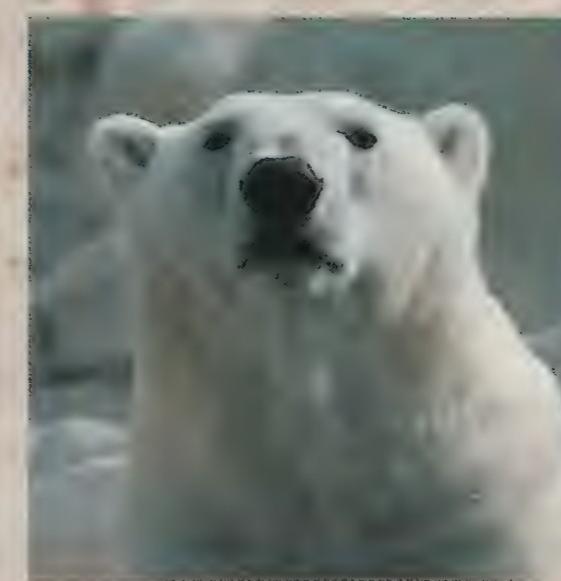
Geographic Distribution: Polar bears range across the frozen top of the Northern Hemisphere. They are found in the northernmost reaches of Alaska, Canada, Russia, on Norway's far-flung Svalbard Islands, and along the coasts of Greenland. They reach their southern limit in Canada's Hudson Bay.

Status: An estimated 21,000 to 28,000 polar bears roam across large distances of the Arctic. While not considered endangered, some isolated populations are vulnerable to pollution, and possibly to the effects of global warming.

Habitat: Most polar bears live on ice where it meets open water. There they find their most important prey—seals. Some polar bears live at least part of the year on actual land, after winter ice and snow melt. Unlike other bears, they inhabit habitats virtually free of vegetation.

Natural Diet: Polar bears primarily hunt seals—especially ringed seals (*Phoca hispida*), but also bearded (*Ergnathus barbatus*), harp (*Phoca groenlandica*), and hooded seals (*Cystophora cristata*). On occasion, they also attack larger animals, such as walrus (*Odobenus rosmarus*) and beluga whales (*Delphinapterus leucas*), and eat carrion. Small animals and vegetation, if available, supplement their diets during food shortages.

Reproduction: The polar bear is a slow breeder. Most females reach breeding age at four or five years, and usually do not breed more than once every two or three years. Males take longer to mature, about



GARY JACOB

six years, but often begin mating as late as ten years due to stiff competition with other males for mates. Breeding occurs from March to June, when one male may mate with several females. One to three cubs are born in November or January, after the female digs a den in the ice (rarely on land). Mother and cubs remain in their den until late March or April. Cubs stay with their mother for

two years or a bit longer.

Life Span: Polar bears live up to 25 years in the wild; The oldest zoo polar bear lived 41 years.

Behavior: Aside from courting adults and females with young, polar bears generally live alone. In some areas, such as walrus colonies, they may scavenge and feed together, but they hunt alone. The bears sniff out seals and catch them when they surface at breathing holes in the ice, stalk them when they rest on the ice, and break into their ice dens. Food availability and the seasonal ebb and flow of ice keep them on the go. They wander widely, and can cover more than 40 miles a day. Polar bears frequently swim from one ice floe to the next, paddling at about six miles per hour with their front paws. When necessary, they can stay under water up to two minutes.

A Few Polar Bear Neighbors:

SEALS AND WALRUSES: These marine mammals keep a wary eye out for polar bears, which hunt them. These two haul out onto the ice or shore, but hunt fish under water.

SNOW GEESE (*Anser caerulescens*): These white geese with black wingtips breed in the far north and spend their winters far to the south along North America's coasts. In winter, you can see thousands at coastal refuges from New Jersey south to North Carolina.

ARCTIC FOX (*Alopex lagopus*): A small, usually all-white, canid that scavenges at polar bear kills, and also hunts small animals, including baby seals.

SNOWY OWL (*Nyctea scandiaca*): All white except for some black speckling, the snowy owl hunts lemmings and other small creatures.

Fun Facts: Some polar bears living in Alaska are suspected of "commuting" to and from Siberia via floating ice floes.



A polar bear can sniff out seal breathing holes from more than half a mile away.

While in their birthing dens, female polar bears live off their fat reserves—without any food—for up to eight months.

Polar bears likely evolved from a light-colored population of brown bears.



CORBIS/CANADIAN MUSEUM

when it was about three months old was a cause for

much celebration. At the Zoo, I watched the mother teach her cub proper back-riding etiquette and listened to the short-range "chuffing" calls used between female and cub. The cub rode about on her mother's back, hip, and shoulder. If the cub seemed off-center, its mother shook vigorously, occasionally flipping the cub all the way over her back; when the cub was too far forward, its mother elbowed it back. To get aboard, the cub stood on its hind legs, grasped the female's long fur with its forepaws, and scrambled on.

The first sloth bears came to the Zoo in 1898; since then, 24 sloth bears have lived here for various amounts of time. Eleven litters of cubs have been born here, the last in 1994. In 1998, we acquired a female named Hana, born in Warsaw, Poland, in 1994, and here on a breeding loan from the Toledo Zoological Gardens. The Toledo Zoo imported her because there are only 40 sloth bears in the North American zoo breeding program.

Conservationists believe sloth bears are threatened by habitat loss and

A hulking, usually brown, animal with a humped back and powerful long claws. Although one of the most respected animals in the world, brown bears go out of their way to avoid people. Despite this, habitat loss and hunting have greatly reduced their populations.

ORDER: Carnivora

FAMILY: Ursidae

GENUS AND SPECIES:

Ailuropoda melanoleuca

BROWN (KODIAK / GRIZZLY) BEAR

Physical Description: Brown bears vary in size and color from region to region. The frosted, or grizzled, coats of bears living in the American west earned these animals the name "grizzly." In some other areas, brown bears have whitish or blackish coats. Kodiak bears—from Kodiak Island, off the Southern coast of Alaska—are the largest brown bears. In North America, brown bears often live in the same areas as the smaller American black bear. Brown bears are distinguished from black bears by their humped shoulders, more upturned snouts, longer fur, and longer claws. Brown bears have large snouts but small ears.

Size: Male brown bears grow larger than females. On all four legs, a brown bear stands up to five feet tall. But standing on two legs, as brown bears can do for short periods, a large individual towers up to nine feet tall. Females may weigh more than 450 pounds, but large males reach close to 1,000 pounds. Brown bears grow from six and a half to nine feet long.

Geographic Distribution: Brown bears live in mountains and grassy wilderness in North America, Europe, and Asia. However, their range has been greatly reduced. The largest populations remain in Alaska, Canada, and Russia. Small populations hang on in Austria, Finland, France, Italy, Norway, Spain, Sweden, Syria, northern India (in the Himalaya), and other countries. Fewer than 1,000 animals live in the lower 48 U.S. states, mainly around Yellowstone and Glacier national parks.

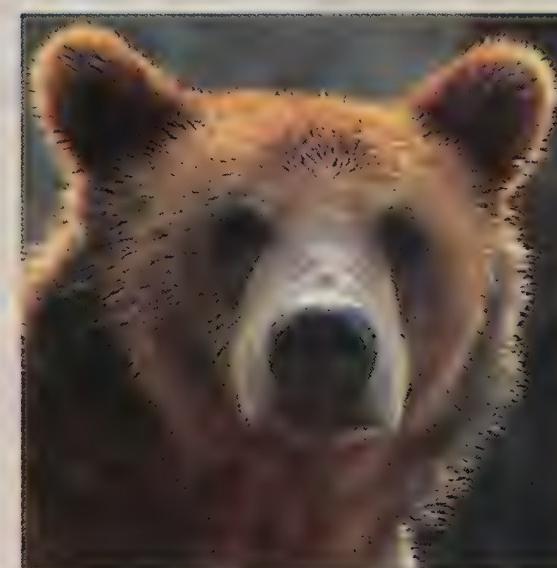
Status: Outside Alaska, the U.S. brown bear population is listed as threatened. Scattered small populations in other areas, such as in Europe, are endangered, with only sometimes a few individuals remaining.

Habitat: Brown bears live in a wide variety of open, or semi-open, northern habitats, including grasslands, coastlines, tundra, and mountain and lowland forests.

Natural Diet: Like their habitats, brown bear diets vary. Brown bears are classic omnivores—animals that eat both meat and plants. Most brown bears primarily eat vegetation, including tubers (underground stems and roots), berries, and pine nuts. But they also eat moths, grubs, rodents (dug out of their burrows), carrion, and occasionally large animals such as horses, bison, and moose and other deer (usually young ones). Salmon and trout provide important protein for brown bears before they den for the winter. In many areas, however, dams have blocked salmon and trout streams, and many populations have disappeared.

Zoo Diet: Keepers feed the Zoo's Kodiak bear, Kiska, a dry-food mixture (called chow), plus vegetables such as sweet potatoes and carrots and fruits, including oranges, apples, and grapes.

Reproduction: Brown bear populations cannot easily bounce back from losses because they breed slowly. Females reach maturity between four and ten years old, and average about two cubs every four years. Male and female brown bears mate in late spring or early summer.



Young, usually two or three cubs, are born in the mother's winter den between January and March. Usually, brown bears stay in their dens until April, May, or June. Young stay with the mother for one and a half to four and a half years.

Life Span: Brown bears live up to 30 years in the wild, and close to 50 years in zoos.

Behavior: Brown bears search widely for food, living solitary lives, except for mothers raising young. However, in areas where food is concentrated, such as streams where salmon or trout are spawning, bears feed side by side. During cold months, from October or December through March or May depending on location and weather, brown bears sleep in dens inside caves, dug-out hollows, or dead trees. They emerge in warm weather. Brown bears rely upon scent more than hearing or sight to survey their surroundings.

A Few Brown Bear Neighbors:

GRAY WOLVES (*Canis lupus*): These wolves inhabit the same areas as brown bears in North America and parts of Eurasia. In North America, coyotes (*Canis latrans*) often hang around bear kills, waiting to grab a few scraps.

PUMAS (*Puma concolor*): Also known as mountain lions, pumas share brown bear habitat in North America's western mountains. In their small range in eastern Russia, the endangered Amur, or Siberian, tiger (*Panthera tigris altaica*) lives in areas inhabited by brown bears. They sometimes prey on young bears.

RAVENS AND MAGPIES: Opportunistic members of the crow family, these birds often live near brown bears, taking advantage of the bear's leftover food. The common raven (*Corvus corax*) is a huge crow that croaks instead of caws. The black-billed magpie (*Pica pica*), smaller than a crow, has a long, shiny green-black tail, and white wing patches and belly.

MULE DEER (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), elk (*Cervus elaphus*), and moose (*Alces alces*) share western brown bear habitats, and occasionally become meals for them. In Eurasia, deer species include elk (or red deer), and roe (*Capreolus capreolus*) and fallow deer (*Dama dama*).

Fun Facts: Kiska, the National Zoo's Kodiak bear, dug a seven-foot-deep winter den under her enclosure. She occupies the den from November to late March. She often emerges from sleep on warm winter days, when she seeks out fruit and vegetable snacks keepers leave for her.

Although it usually lopes along, a brown bear can charge surprisingly fast if threatened, moving up to 30 miles per hour for short stretches.

California's state flag depicts a grizzly bear. However, the last grizzlies in California were killed off by the 1920s.



change. But until recently the only field studies have been in Chitwan. The rich, productive alluvial floodplain of the Rapti River, which flows through the Chitwan Valley, is not at all like most of the remaining sloth bear habitat. More than half of the forested wildlife habitat left on the Indian subcontinent is tropical dry forest, a highly seasonal habitat with low productivity compared to Chitwan. In October 1998, I visited this habitat in central India's Panna National Park, where A. J. T. Johnsingh and K. Yoganand are now studying sloth bears. Johnsingh, who worked with me in 1981 as a FONZ-supported post-doctoral fellow, is head of the wildlife faculty at the Wildlife Institute of India. Yoganand is his graduate student.

Yoganand, Yogi to his friends, is studying the behavioral ecology of the sloth bear for his doctoral dissertation. By comparing feeding, ranging, and other behavior of sloth bears in this relatively poor, dry habitat with the bear's behavior in the rich Chitwan site, he will be able to assess the limits of the bear's adaptability in the face of the massive environment transformation that is going on through much of the forested areas of India, Nepal, and Sri Lanka.

Yogi's studies are ongoing but he has learned that his bears are dependent on harvesting a very few species of driver ants, even though many more ant species live in Panna. The key to understanding sloth bears in this habitat lies first in understanding why they focus their foraging efforts on just a few ant species and then in understanding the ecology of driver ants. The factors that limit the distribution, size, and growth rates of ant colonies, and the frequency and extent to which the colonies can be harvested by sloth bears will also limit the distribution and density of sloth bears.

Before they are finished, these scientists plan to survey much of the remaining tropical dry forest, in conjunction with Indian Forest Department officers, to determine the sloth bear's current distribution and assess the threats it faces. The situation is not promising. Most of India's tropical dry forests are deteriorating from excessive cattle grazing and the extraction of fodder and other forest products by people. What is promising for sloth bears is that Indian and Nepali wildlife scientists are looking into their survival needs in detail. With this information, workable conservation plans for specific regions and habitat types can be crafted and implemented. I find this trend encouraging. The sloth bear and all the magnificent wildlife of the Indian subcontinent will benefit. Z

John Seidensticker is Curator of Mammals at the Smithsonian National Zoological Park.



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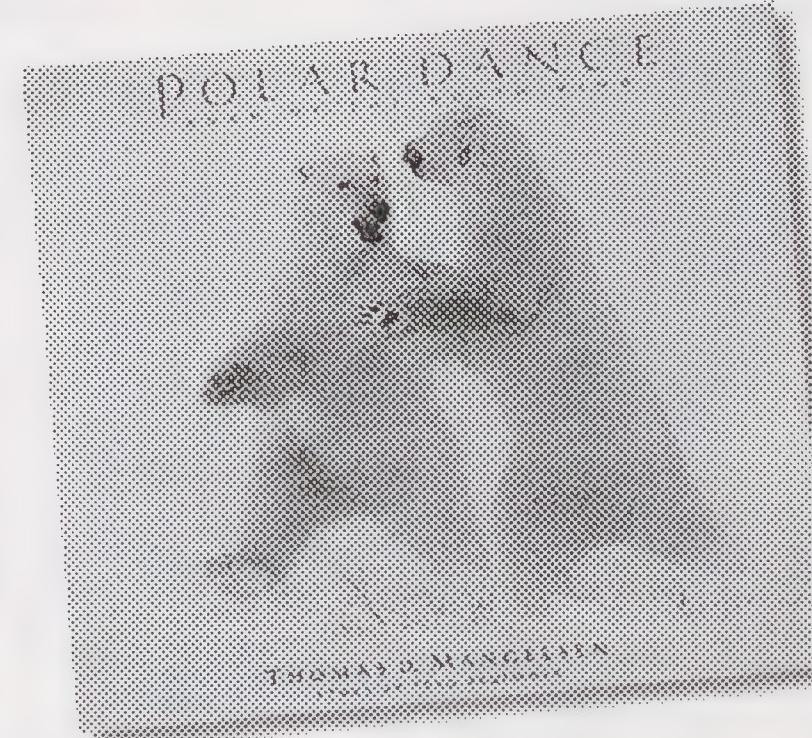
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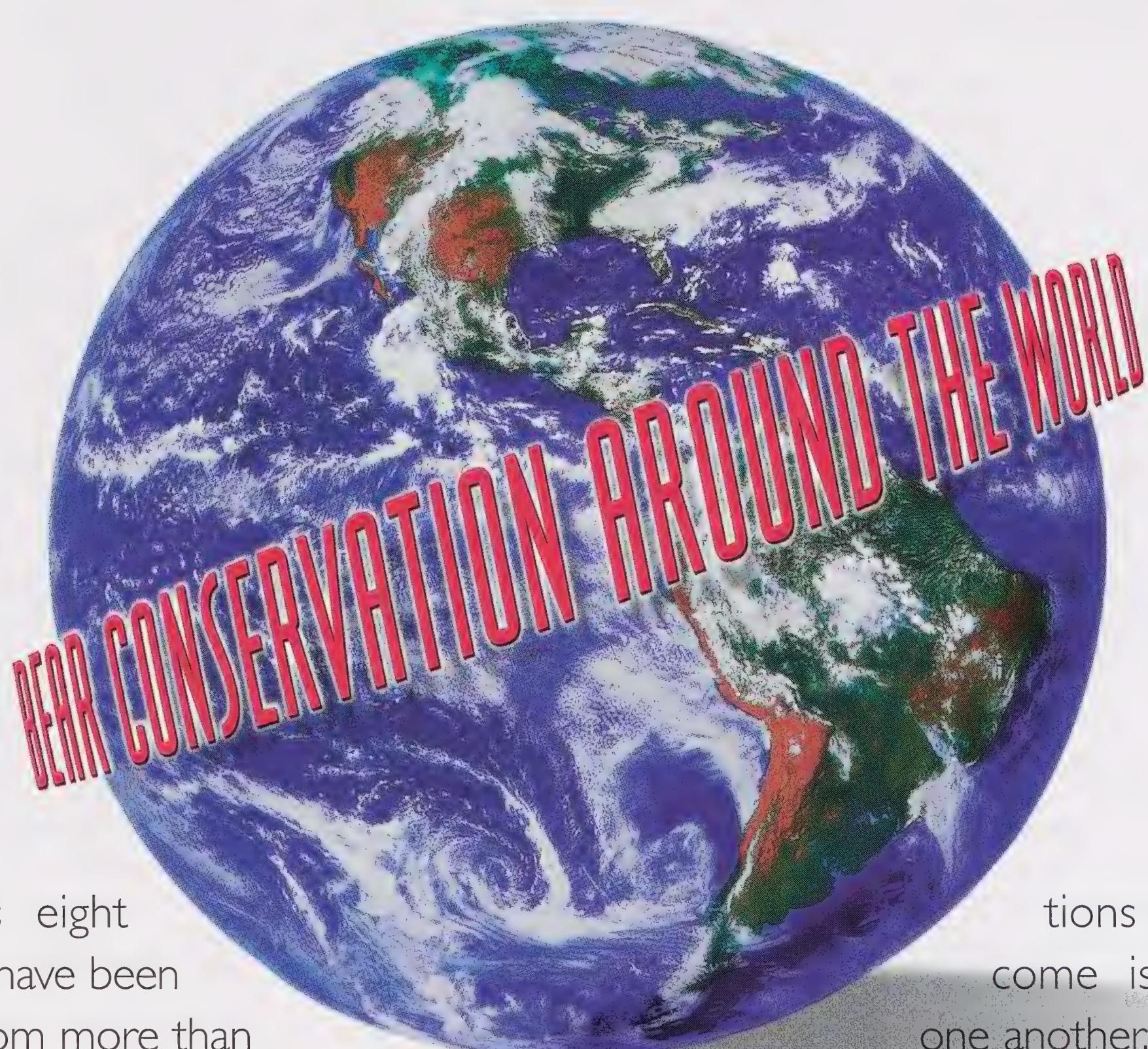
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The world's eight bear species have been eliminated from more than half of their historic range and what remains will continue to dwindle unless serious conservation efforts for all the species are made. Like most other large mammals, bear numbers have declined, and continue to decline in numbers because of habitat loss, mostly to fill human needs for living and agricultural space, and to commercial exploitation of natural resources. People also kill bears for a variety of reasons, depending on the species and its distribution. Bears are hunted legally, poached for their parts and products for use in traditional medicine and for food, and killed as pests.

A major problem facing bears today is population fragmentation, in which subpopula-

tions of bears become isolated from one another. Each isolated subpopulation lives in a relatively small area with limited resource diversity. Already, many isolated subpopulations of some species, including brown bears and American black bears, have gone extinct.

Current conservation efforts vary in intensity, from the highly organized management of grizzly bears and the international cooperation in the management of polar bears to no management of most Asian species. Unfortunately, the size of many bear populations is either unknown or too low to sustain any human-caused mortality. All species of bears, except the brown bear and the American black bear, are considered either endangered or vulnerable.

BY CHRISTOPHER SERVHEEN

GIANT PANDA

(*Ailuropoda melanoleuca*)



The giant panda has been called a "blueprint for extinction" due to its highly specialized habits and its localized range. With fewer than 1,000 wild giant pandas in 25 subpopulations distributed along the eastern edge of the Tibetan plateau, the giant panda faces many of the same challenges as other insular bear populations. Worldwide concern is focused on the situation of the giant panda and, as a result, significant progress may be made to address these problems. Management tactics used to deal with the plight of the giant panda in the future may serve as an example for bear conservation in other areas. (To read more about panda conservation, see Devra Kleiman's article in this issue.)

GARY JACOB

SPECTACLED BEAR

(*Tremarctos ornatus*)

Habitat loss is the major problem facing the spectacled bear. Human activity—agricultural development and exploitation of natural resources such as timber and minerals—destroys habitat and leads to the insularization of bear populations. Increased farming in the spectacled bear's range has led to depredations on crops. Ultimately, this results in dead bears because the farmers view spectacled bears as direct competitors for survival.

Spectacled bears are also hunted for use in folk medicine. Fat is used for bruises, and claws and penis bones are believed to enhance strength and fertility. Additionally, there is a certain perceived machismo associated with hunting that contributes to the killing of bears.

Each country in its northeastern South American range now has laws protecting the spectacled bear, but enforcement is limited and the future of the spectacled bear rests to a large degree on these governments' ability and commitment to support sustained resource-use policies that can afford protected core areas for reserves for bears. Education of the local people about the bear to promote public support is the most important and immediate task of conservationists.



GARY JACOB

SUN BEAR

(*Helarctos malayanus*)

Conversion of thousands of square miles of lowland forest to agricultural uses in Southeast Asia and the killing of bears by settlers are decimating the sun bear population. Bear habitat is de-



GARY F. WEINRAUB

stroyed when land is cleared to create rubber and oil palm plantations. Meanwhile, reserves and parks are magnets for poachers because they often are the only areas where large animals remain. For instance, more than 60 well-used poacher camps were discovered in a Thai reserve. Poachers sell the bears as pets or for their parts.

The insularization of reserves, as the surrounding lands are developed, compounds the problem. Because a sun bear's basic habitat needs are relatively unknown, existing reserves may not even be providing appropriate habitat.

Conservation groups and government managers have shown little interest in sun bears, mainly because little is known about them. However, two sun bear research projects were begun recently on Borneo.

SLOTH BEAR

(*Melursus ursinus*)

There are probably 8,000 to 22,000 sloth bears in the world, most living in central India's tropical dry deciduous forests. The sloth bears' range—India, Sri Lanka, Bangladesh, Nepal, and Bhutan—is highly fragmented, and habitat alteration, such as forest cutting and poaching, threaten isolated populations. Already the bear is gone from much of its former range.

The number of sloth bear gall bladders in international trade may indicate that poaching could have significant impact on the remaining population. Meanwhile, females with cubs are killed so the cubs can be sold for "dancing bears" or used in "dog fights" in Pakistan and elsewhere. Laws to prevent killing of bears and the export of their parts are in many cases either ineffective or not enforced. (For more information about sloth bears, see John Seidensticker's article in this issue.)

AMERICAN BLACK BEAR

(*Ursus americanus*)

The American black bear is widely distributed throughout North America, occurring in all Canadian provinces (except Prince Edward Island), northern Mexico, and in 32 states of the United States. Most existing populations are stable or increasing due to careful management. An estimate by 40 states and 11 provinces revealed a total of 500,000 to 600,000 black bears. The species is adapted to a variety of habitats and can live near people, who are more tolerant of this species than its cousin in western North America, the grizzly bear.



RUSSELL BURDEN

The American black bear is considered a game animal throughout most of its range, and its hunting is carefully managed. However, some poaching occurs and gall bladders and other parts from this species sometimes appear on the black market.

ASIATIC BLACK BEAR

(*Ursus thibetanus*)

Asiatic black bears are found through much of southern Asia, where, it is believed, they prefer forested hills and mountains and the tropical moist forest below alpine elevations. With the possible exceptions of some dense forests of Southeast Asia and Burma, and the Russian Far East, the Asiatic black bear is in serious danger throughout its range. It suffers from habitat loss, poaching for parts and products, being killed to reduce agricultural damage, and being captured for the pet trade.

The capture of bears for use as performing animals, for instance, is still quite common in Pakistan. Captive bears are taught to wrestle and dance by groups of "gypsies" who earn their sole living from the bears.

The Asiatic black bear is the favored species for traditional medicine and for specialty cuisine, such as bear-paw soup. It is also the most readily available bear species in the countries where these uses are most prevalent: Korea, Japan, and China.

This bear is very close to extinction, or may already be extinct in South Korea, where it is the

only native bear. In Japan, the species went extinct on Kyushu island in the 1950s, but remains on Honshu and Shikoku. However, it is still legally hunted as a game animal, even in some national parks and sanctuaries. Conversion of its habitat to monoculture plantations of cedar and cypress poses yet another problem for the bear in Japan. Once the natural forests are removed, the plantations become sources of food. Bears then become "pests," and are destroyed when they enter plantations and peel bark to reach the trees' cambium.

In China, the demand for bile from this species for use in traditional medicine has led to bear "farms," where the animals are held in small cages and their bile is drained by means of tubes surgically implanted into their bile ducts. The extracted bile is then dried and sold in the form of dark brown crystals. As many as 10,000 Asiatic black bears exist on such farms in China.

Thailand is also a center of the trade in this species. In fact, Korean tourists visit Thailand in groups to enjoy meals of bear meat and bear-paw

soup. In Thailand, however, there is little differentiation in the marketing of sun bears and Asiatic black bears. It is likely that both are eaten and kept as pets depending on their availability.

Little is known about Asiatic black bears in Burma, Laos, Cambodia, and Vietnam, except that they occur in forested areas in these countries and they are not protected there.

BROWN BEAR

(*Ursus arctos*)

The range of the brown bear is more widespread than that of any other bear species. Brown bears occur in Europe, Asia, and North America from northern Arctic tundra to dry deserts. Within this vast area, however, the brown bear's distribution has been significantly reduced, largely as a result of increasing human populations and habitat loss. Since the mid 1800s the rate of decline accelerated with the advent of the use of firearms



and poison to kill bears.

This decline is well documented in Europe, where bears in modern Denmark disappeared about 3,700 years ago. They went extinct in Great Britain in the 10th century, in eastern Germany in 1770, in Bavaria in 1836, in Switzerland in 1904, and in the French Alps in 1937.

Only small numbers of bears in isolated populations remain elsewhere in western Europe. For instance, a population in the western Pyrenees Mountains on the border between France and Spain numbers just six to eight animals, making it one of the most endangered wild mammal populations on Earth. A few bears from Eastern Europe have been reintroduced into an area east of this population, but their future is unknown. Similarly, two small populations exist in Italy, one of five to ten animals in the Trentino Alps, another of 70 to 80 animals in the Appennines in and around Abruzzo National Park.

Five to six thousand bears survive in eastern Europe, with most in Romania. Russia boasts the largest bear population at more than 120,000, but both hunting and poaching kill large numbers of bears each year. Brown bears remain in China and Mongolia, although in declining numbers, and are rare in northern India and Pakistan. There is also a brown bear population on the Japanese island of Hokkaido.

In North America, the brown bear is divided into two subspecies: the grizzly, found in continental North America, and the Kodiak bear, which lives on the Alaskan islands of Kodiak, Shuyak, and Afognak. Brown bears occupy a range about half the size as 100 years ago, when bears lived in suitable habitats in most of western North America from the Arctic Ocean to central Mexico. Their decline was rapid, and isolation into small populations was well underway by 1922; most isolates are now extinct. The species now exists throughout Alaska and western Canada, where it is still considered a game animal. Fewer than 1,000 live in five subpopulations in Wyoming, Montana, Idaho, and Washington.

POLAR BEAR

(*Ursus maritimus*)

Polar bears are distributed throughout coastal habitat in five nations: Greenland, Norway, Russia, Canada, and the United States, as well as on the Arctic Sea. The population consists of 19 population units with an estimated 22,000 to 27,000 polar bears worldwide. At present, the polar bear

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Located in Grizzly Park at the West entrance of Yellowstone National Park, the Center offers views rarely, if ever, seen in the wild. Here you'll discover firsthand the habits and surprisingly playful behaviors of live grizzly bears and a gray wolf pack. The center also presents a broad range of interactive exhibits, films and presentations and a wildlife themed gift shop suitable for all ages.

Come experience this unparalleled educational facility devoted to the preservation of these threatened wildlife species. A portion of the proceeds from entrance fees and gift sales is donated to the International Grizzly Fund, a 501(c)3 fund, which sponsors conservation for wild bears.

The Grizzly Discovery Center, a Bear and Wolf Preserve is open all year, 8:30 a.m. to 8:30 p.m., with wildlife viewing until dusk. For more information call or write: Grizzly Discovery Center, P.O. Box 996, West Yellowstone, MT 59758. (800) 257-2570 or (406) 646-7001. Visit our Web Page; www.grizzlydiscoveryctr.com, or Email; info@grizzlydiscoveryctr.com for inquiries.



occupies the majority of its original habitat.

The future prospects of the polar bear are much brighter now than in the 1960s due to international cooperation on management and research facilitated by the Polar Bear Specialist Group, which is composed of bear biologists and conservationists organized by the World Conservation Union's Species Survival Commission. A factor in the success of the specialist group was the mutual concern of member countries and the similar threats facing the species throughout its range. The fact that most polar bear populations cross national boundaries also promoted international cooperation. Polar bears now appear secure worldwide with only some limited concern about certain small areas.

The species remains highly vulnerable to habitat alteration, however. Ongoing oil and gas

exploration and development in the Arctic basin, with the risk of an accidental oil spill, is a potential threat. Another major threat is the concentration of environmental toxins in polar bears, which are at the top of the Arctic food chain. Chemicals such as heavy metal and chlorinated hydrocarbons have been appearing in increasing amounts in polar bear tissue. Should these levels affect reproduction, a significant change in the population could take place despite limited harvest and continuing habitat availability. The ability of managers to affect the concentrations of these contaminants is minimal given their global origin.

Management strategies for bears are generally directed at ensuring that habitat remains available and managing the rate of human-induced mortality. To do this requires research about the species to determine its current distribution, habitat requirements, food habits, patterns of land use, reproductive behavior, and

ability to sustain a certain rate of mortality. Then, programs must use these data so that the species' needs are met. In addition, sociological issues must be addressed so the species has success in its continuing interactions with people.

Public education about bears and ways to co-exist with bears are critical to bear conservation worldwide. The key to successful conservation is the acceptance and management of bears by people who live near them. What is good for bear conservation is also good for human survival and quality of life, and this must be the primary theme of public education about bears. In a very real sense, the fate of all the bears may be decided in the next ten to 20 years. *Z*

Christopher Servheen is the Grizzly Bear Recovery Coordinator for the U.S. Fish & Wildlife Service and Co-chair of the World Conservation Union/Species Survival Commission Bear Specialist Group.

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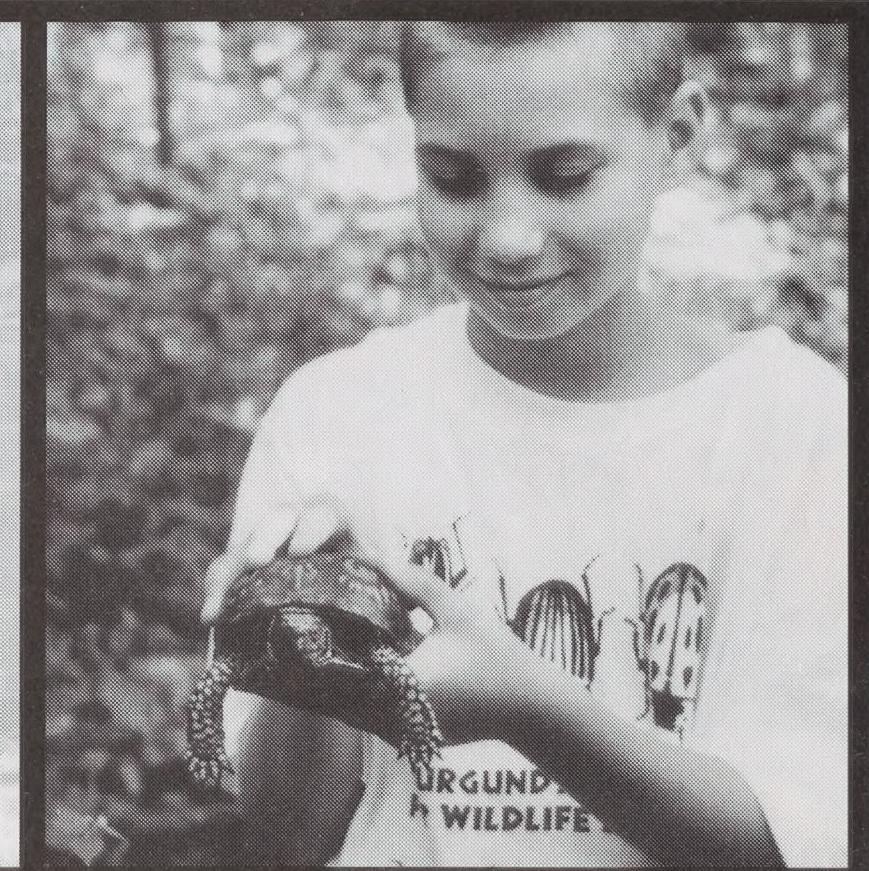
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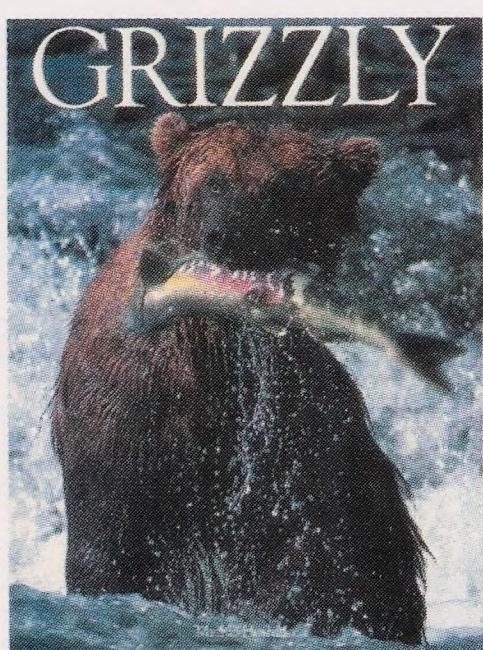
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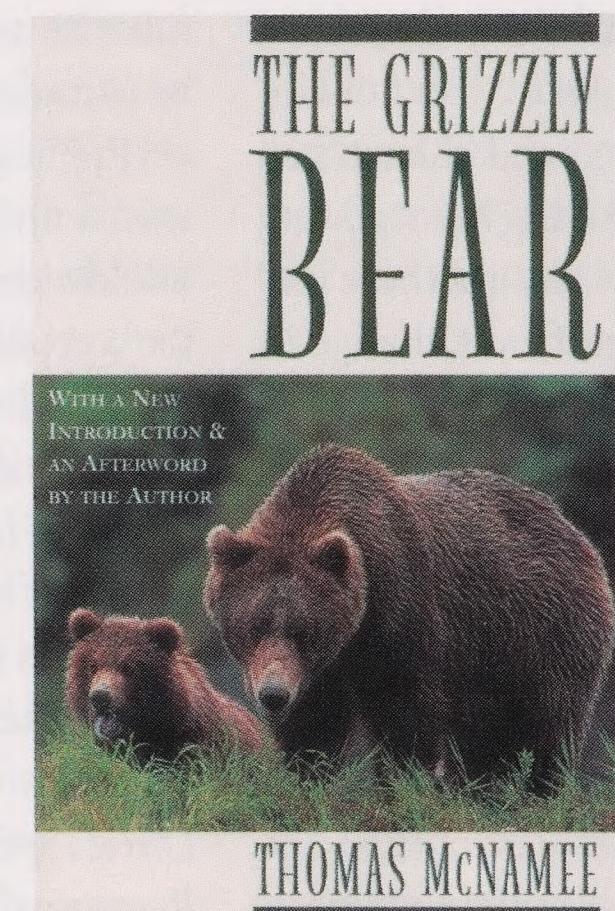
The Great Bear Almanac. 1996. Gary Brown. The Lyons Press, New York. 336 pp., paper, \$22.95. Recently retired National Park Service ranger Gary Brown examines physiology, social behavior, and habits as well as bears in art, myth, religion, literature, and film. Filled with charts, tables, and photographs, *The Great Bear Almanac* is a unique, comprehensive guide to the bears of the world.



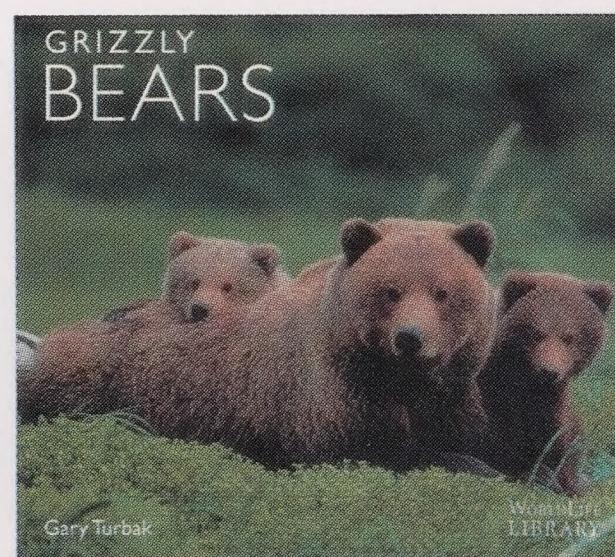
catches a family of Alaskan grizzly bears on the hunt and at play during all four seasons in the rugged Alaskan wilderness.

The Grizzly Bear. 1997. Thomas McNamee. Lyons and Burford, New York. 314 pp., paper, \$16.95. Thomas McNamee explains the varied behaviors of the grizzly

Grizzly. 1986. Michio Hoshino. Chronicle Books, San Francisco. 80 pp., paper, \$12.95. Hoshino's wildlife photography



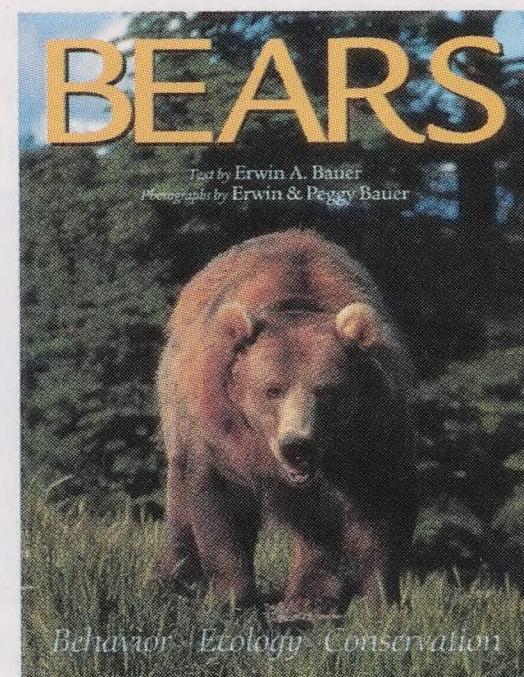
bear in this readable natural history. *The Grizzly Bear* follows a fictional bear through typical bear situations.



Grizzly Bears. 1997. Gary Turbak. Voyageur Press, Stillwater. 72 pp., paper, \$14.95. Journalist Gary Turbak uses his personal experi-

ences as a resident of grizzly country to highlight his book about the lives of grizzlies.

Bears. 1996. Erwin A. Bauer and Peggy Bauer. Voyageur Press, Stillwater. 160 pp., hardbound, \$35.00. World famous wildlife photographers Erwin and Peggy Bauer explore the world of North American bears. They discuss the similarities and differences among bear species and argue for the preservation of bear habitat.

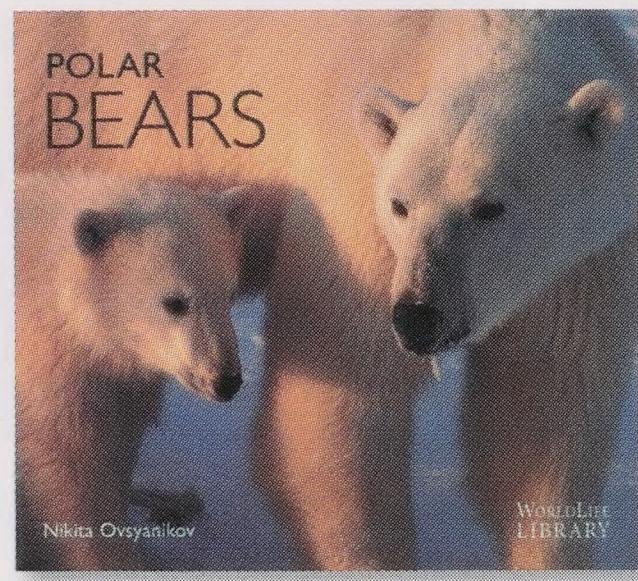


polar bears in the High Arctic, it is the perfect general lesson in polar bear behavior and habits.

Polar Dance: Born of the North Wind. 1997. Thomas D. Mangelsen. Hardbound, \$65.00. *Polar Dance* is a vivid photo documentary of a female polar bear and her two cubs through four seasons in their harsh Arctic habitat.

Mangelsen shows how polar bears live in a vast landscape considered inhospitable to all forms of life.

Polar Bears. 1998. Nikita Ovsyanikov. Voyageur Press, Stillwater. 72 pp., paper, \$16.95. *Polar Bears* is a wonderful introduction to the great white bears by one of the world's foremost polar bear researchers. With easy to read text and spectacular shots of



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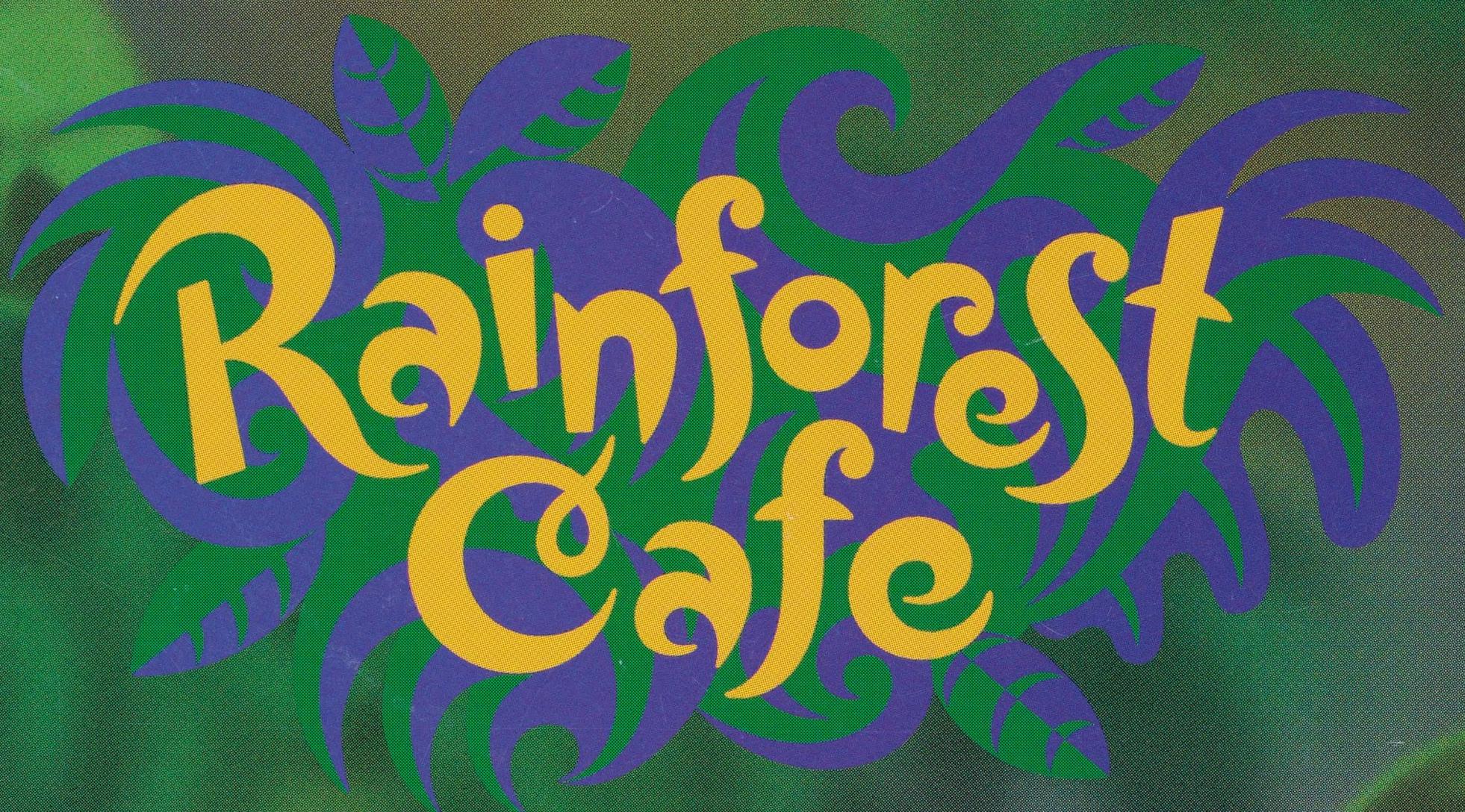
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